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A Lecture ON FREUDIAN PSYCHOLOGY.

Delivered at the Institute of Pathology and Research, St. Mary's Hospital, on June 3rd, 1926,

BY CHARLES S. MYERS, M.D., SC.D. CAMB., F.R.S.,
DIRECTOR, NATIONAL INSTITUTE OF INDUSTRIAL PSYCHOLOGY.

WHEN I was asked to give an address on the scientific value of Sigmund Freud's contributions to psychology I recognised at once the impossibility of dealing adequately with the subject—in the first place within the compass of an hour's lecture, and secondly without having familiarised myself with the numerous accretions and modifications to which in recent years Freud has been subjecting his earlier views. The latter of these difficulties I have endeavoured to remove, so far as I could. The former will inevitably prevent me from entering into many, I hope less important, details of the subject.

THE "ALL-OR-NONE" ATTITUDE TOWARDS FREUD.

I accepted the invitation from selfish and unselfish motives. On the one hand, I had long wanted to form for myself a more exact judgment of the value of Freud's teachings. On the other hand, I recognised that few had ever made this attempt in any spirit of impartiality or after adequate training in normal psychology. The reaction of nearly all of Freud's followers and opponents has been an emotional one—an "all-or-none" response. Either nothing could be right or nothing could be wrong, within the vast psychological structure which Freud has erected. Such an attitude is the natural result of the play of lower uncritical levels. Few physicians have had the psychological training to view Freud critically. Medical education is still apparently based on the supposition that only material processes in the living organism are worth studying and that normal psychology and psycho-physical methods have nothing to teach, as if mind did not exist and were of no therapeutic value for general medicine.

FREUD'S OWN CONFLICTS.

Freud himself is not a trained psychologist. Had he been, it is quite possible that his developing genius would have been so stunted by the (now superseded) psychological doctrines of his day, that his brilliant contributions to the subject—of such varying worth—would have been altogether denied to us. Contempt is often nature's cloak for ignorance, but it is not altogether unjustifiable, because of the errors of its youth, that Freud despises or ignores current psychology. Of him the psychologist might say what Dostoievsky, so I have read, once said of himself: "I am called a psychologist. It is wrong. I am simply a realist in the higher sense of the word; that is, I depict all the dim recesses of the human soul." Unfortunately, the untrained psychologist is only too easy a prey to the prime psychological fallacy—that what he finds in his own mind he assumes to exist in the minds of all others. I suspect that Freud is too often unwittingly depicting "the dim recesses of his own soul," within which affection so clearly conflicts with enmity, generosity with despotism, inferiority with ambition, and the volatile, volcanic temperament of the artist with the conscientiousness of the man of science.

For Freud has himself stated that throughout his life he has always found the emotional need both for "an intimate friend and a hated enemy," [1] whether in different persons or in the same person at different times. A few years ago I sent a young pupil to see Freud, who reported to me that when he remarked to Freud that he had just met one of the most distinguished men—let us call him X—who had seceded from the Freudian school, Freud declared himself totally ignorant of X, insisting "ich kenne ihn nicht." Freud's father, it is on record, told a friend that his little Sigmund would never dare to contradict him. As a boy, and no doubt later, he was subject to all the indignities and contempt inseparable from an anti-semitic atmosphere. In my experience a lack of mental balance is notable, too, among Freud's followers, both among his lieutenants and in the rank and file. At least three suicides are on record within the narrow range of Freud's own psycho-analytic circle in Vienna.[2]

HIS PSYCHO-ANALYTIC SCHOOL.

We have to remember that no one can be considered a true psycho-analyst unless he has himself submitted to psycho-analysis, that such psycho-analysis must be conducted by Freud or by one of his more or less immediate lieutenants, and that the process of psycho-analysis necessarily involves what is technically known as "transference," in which certain peculiar relations between the analyst and his subject develop, that invite uncritical acceptance of his views. To these relations I shall return presently.

Freud has thus founded a "school" of which he is the despotic, infallible, quasi-papal head; and to be an apostle of it thus involves the laying-on of hands. As leader of the school he has been compared to the leader of a herd who drives out any members who attempt to usurp his authority. This attitude his enemies ascribe to ambition and intolerance, his devotees to the necessity of protecting his teachings from all risk of charlatanry and pollution. It is not surprising, and certainly not altogether blameworthy, if in framing the many later additions to and modifications of his original views, Freud has at times adopted attitudes closely similar to those which he originally condemned in those of his pupils who were forced to part company with him. These accretions have been of late so numerous and sometimes so much at variance with his previous views that it becomes difficult to criticise some of them in close detail. Six years ago Freud wrote: "I might be asked whether I am myself convinced of the views here set forward, and if so how far. My answer would be that I am neither convinced myself, nor am I seeking to arouse conviction in others. More accurately, I do not know how far I believe in them." [3]

PSYCHO-ANALYSIS AND HYPNOSIS.

But the airy way in which Freud treats such hypotheses as mere embellishments of decorative value cannot apply to the theory and practice of psycho-analysis. This forms the foundation-stone for all his later superstructure. It arose, as is well known, from Breuer's discovery that cures were possible in psychoneurotics by bringing back to consciousness their repressed memories through the influence of persuasion under hypnosis. Breuer believed that an essential factor in such cures was the release of a hitherto repressed emotional experience—the "abreaction" which accompanied the recovery of these forgotten inhibited memories. This process of psychotherapy was hence called "catharsis." It was employed in the British Army with surprising success on a large number of cases of so-called "shell shock" during the Great War.

But in Freud's hands hypnotic suggestion did not prove uniformly successful. His experience was that hypnosis "conceals the resistance" which the psychotherapist desires to reveal. He contends that "hypnosis does not do away with the resistance but only avoids it, and therefore yields only incomplete

[1] The Interpretation of Dreams. English trans. Third edition. 1913. London: G. Allen and Co. P. 385.

[2] Cf. Sigmund Freud: his Personality, his Teaching, and his School. By Fritz Wittels. English trans. London: G. Allen and Unwin. 1924. Pp. 60, 68, 247, &c.

[3] Beyond the Pleasure Principle. English trans. 1922. London: International Psycho-analytical Press. P. 76.

information and transitory therapeutic success." [4] That is not, however, the experience of others who used hypnosis as a rapid method of psychological analysis during the recent war. The hypnotised patient manifested points of resistance where the recovery of lost memories, recent and bygone, proved exceptionally difficult, in much the same way as the non-hypnotised patient; and there was no reason to suppose that the cures brought about by such methods of recovery of repressed experiences were transitory.

In Freud's hands the procedure of psycho-analysis has undergone certain developments since its origin, but it is unnecessary to describe these here. Its broad principles have remained unchanged. The hypnotic state and the principle of catharsis are replaced by free association and interpretation. The character of the subject's associations and the interpretations of the analyst are employed to recognise resistances and repressions.

Freud's aim in psycho-analysis was much the same as Breuer's—"making conscious the unconscious, removing the repressions, filling in the gaps in memory." [5] That this aim rather than the "catharsis"—the "abreaction," or release of a suppressed emotion—is generally the correct one there can, I think, be little doubt. What is in dispute is Freud's insistence that psycho-analysis must be carried back to the patient's early memories of from 2 to 5 years of age. This, Freud maintains, is essential for true psycho-analysis. It is essential because of Freud's peculiar views concerning sexual development and the relation of sexual activity to the psychoneuroses. But we must recognise at the outset that other psychotherapists claim equal success in their treatment without extending their analysis so far backwards, and that they are wholly unable to accept Freud's views as to the *invariable* responsibility of infantile sexual conflicts and sexual maldevelopments for the psychoneuroses.

It is noteworthy that Freud's escape from the use of hypnosis may not be so complete as at first sight it appears to be. During Freudian psycho-analysis the patient lies on a couch and is asked "to put himself into a condition of calm self-observation, without trying to think of anything," and then to narrate whatever comes into his mind. But such a state of reverie, bereft so far as possible of self-control, is apt to pass into a condition not far removed from that of slight hypnosis. I have known patients at the close of a period of analysis "pulling themselves together" with a start, just as if they were passing from dreamland to the reality of every-day life. In one case I have actually seen the old personality, as it were, suddenly reappear with total oblivion once more of the suppressed memories which I had been reviving during the analysis.

Transference.

As has already been mentioned, psycho-analysis does not merely consist in voluntary passive confession. The analyst is ever on the alert to recognise resistances, to interpret and to remove them, and to explain to the patient what his repressions and their distortions mean. In one description of the process of psycho-analysis I remember reading how, while the patient—of the gentler sex—is lying in a darkened room, the analyst's hand is smoothing her troubled brow, as long-repressed memories are revived and interpreted.[6] I do not wish it to be supposed that such are the usual conditions under which psycho-analysis is conducted, but psycho-analysis in the Freudian sense does involve—and it is, according to Freud, essential for success that it should involve—a very special and intimate relation between the analyst and his patient, to which he gives the name of "transference." Freud gives the following examples of this relation as described to him by the patient's friends: "He has quite lost his head over you; he puts implicit trust in you; everything you say is like a revelation to him. . . . It is positively boring the way he never speaks of anything but you; he quotes you all the time." [7] This transference, like all suggestibility according to Freud, depends on sexual attachment. In the psychoneuroses it means (in Freudian language) the gathering together of the whole of the sexual energy which has hitherto been withdrawn from the control of the ego and become attached to the symptoms, and the transfer of that energy to the analyst. Without such transference, says Freud, "the physician and his arguments would never even be listened to." [8] It "exists in the patient from the beginning of the treatment and is for a time the strongest impetus in the work" [9] of psycho-analysis. Sometimes the transference is a negative one, a feeling of hostility towards the analyst; but it is clear that such a relation cannot make for a successful issue. Women patients, we are told by Freud, fall in love with the analyst; men patients (by homosexual sublimation, he supposes) admire him. Having won this transference the analyst's great care, we are told, is to re-direct it, so as not to endanger it.

We may well wonder how far psycho-analysis, as practised by Freud, owes its success to the resuscitation of repressed complexes, how far to the peculiar interpretation, almost invariably in terms of sexuality, which he gives his patients, and how far to the extraordinarily suggestive influence which the analyst comes to exert over his patient because of this "transference." Everyone who has practised suggestion as a method of psychotherapy will have met cases of cure where, it later turned out, the patient did not really even understand the explanations given him, but accepted them by force of suggestion, not of comprehension or reason. I recall a case in which a person under light hypnosis carried out various acts to the amusement of a roomful of undergraduates. On being fully awakened, he declared that he was throughout quite aware of the absurd things he had been doing, but did them "to oblige" the hypnotist. Realising the enormous power of suggestion and Freud's stress on transference, can we from the therapeutic success of Freud's psycho-analysis justifiably infer the truth of his interpretations and of his view of the rôle of sexuality in the psychoneuroses? Can we be sure that Freud is justified in his belief that every neurotic is homosexually inclined; that every neurotic shows in his symptoms a substitute for sexual gratification; that most dreams treat of sexual material and give expression to erotic wishes? [10]

FREUD'S TENDENCIES TO RASH GENERALISATION.

Freud's cardinal error is undue readiness for generalisation. No one will deny the sexual causation of many dreams and neuroses. But he will refuse to admit this as having a general or universal application. So, too—to take another illustration—no one will deny that *some* slips of the tongue are due to the mutual interference of two different intentions. "Is this the explanation of all cases of slips of the tongue?" asks Freud. He replies: "I am very much inclined to think so, because whenever one examines an instance of it this type of solution may be found." [11] Still, it may be, he goes on to say, that a slip of the tongue can occur without the agency of this mechanism. So far, so good. But in later years he succumbs to the temptation of rash generalisation. He maintains ultimately that for the occurrence of *any* slip of the tongue the "suppression of a previous intention to say something is the indispensable condition," [12] and that "in every case a disturbing group of ideas—a complex—can be brought to light which alters the meaning of the intended speech . . ." [13] No one who has had experience of apraxia and of the effects of

[4] Collected Papers. English trans. London: Hogarth Press. 1924. Vol. I. P. 269.
[5] Introductory Lectures on Psycho-analysis. English trans. London: Allen and Unwin. 1922. P. 363.
[6] Contributions to Psycho-analysis. By S. Ferenczi. English trans. Boston, U.S.A.: The Gorham Press. 1916. P. 46.
[7] Introductory Lectures on Psycho-analysis, p. 367.
[8] Ibid., p. 372.
[9] Ibid., p. 370.
[10] The Interpretation of Dreams, p. 240.
[11] Introductory Lectures on Psycho-analysis, pp. 34, 35.
[12] Ibid., p. 52.
[13] Collected Papers, vol. iv., p. 13 ff.

perseveration and previous association, particularly in experimental work on memory, could accept such a generalisation. Of course, every slip of the tongue has its "cause"; so, too, has every error of the pen, every act of forgetting—if only it could be ascertained. But they are certainly not all ascribable to a conflict between antagonistic intentions or to disturbing complexes.

So, again, none will deny that the so-called "Œdipus complex"—in the sense of a special attachment of the child to its parent of opposite sex—exists, but that it is universally present in the development of every individual and can always be appropriately termed "sexual" is sheer generalisation based on totally inadequate evidence and opposed by other competent observers. Freud regards the Œdipus complex as the most important conflict which the child has to face. No one except a confessed psycho-analyst is likely to admit this, until adequate evidence obtained by the unprejudiced from a large number of normal children and adults is obtainable.

His Views of Sexuality.

The importance of the study of the abnormal can hardly be over-estimated, but there is always a risk in applying the results of such study to normal persons. When certain neurological processes are disturbed, the result—e.g., the gait in locomotor ataxy—may have no relation to any behaviour or experience in the childhood of the individual or of the race. If certain children find their way, as Freud avers in all children, from suckling to onanism, if in certain persons the kiss may suffice for sexual gratification, if among sexual perverts other objects and aims become sexual substitutes, even if, in certain normal people, perverse sexual tendencies may arise when normal sexual satisfaction is prevented, we are not justified in concluding, with Freud, that in every normal person sexual perversion is latent or that what rudiments of sexual life exist in the normal child must necessarily be of a perverted order. Admitting the possibility that under certain conditions vicarious organs may be concerned in sexual gratification, we have no right to conclude that the sexual instinct has a manifold source. If sexual feeling may at times irradiate to the anal region, that does not justify us in including this region among the fundamental origins of sexual feeling.

We may allow that sexual gratification can be regarded in Freudian language as an "organ pleasure"—i.e., as a pleasure derived from the activity of a bodily organ—and we may allow that the infant derives similar organ pleasure from suckling movements in solitude—i.e., in the absence of the mother's breast or milk. But this gives us no right to speak of the infant as enjoying an "oral stage" of sexual development in which its desires are directed, narcissistically, homosexually, and auto-erotically, solely to itself.

Nor are we justified in concluding that the mouth forms part of the apparatus of the sexual instinct, because in sexual perversion it can be employed in arousing the sexual orgasm. As well might the hand be called part of the mechanism of the hunger instinct because it can be employed in satisfying hunger. The mouth may satisfy sexual appetite just as the hand may satisfy the appetite for food. But there is a world of difference between this admission and Freud's ambiguous application of the word "erotogenic" to the oral zone. We have no reason to suppose that in this region the feelings of sexual desire can normally be engendered.

We refuse, then, to follow Freud in his conclusion that because infants perform the movements of suckling "with no other object but that of obtaining pleasure," "we therefore call these areas of the body [mouth and lips] erotogenic zones and describe the pleasure derived from suckling as a *sexual* one."[14] We deny that because the child may have a preponderating affection for the parent of opposite sex, this need develop into jealousy, hatred, and a desire to kill the other parent, or that because, say, a girl child may express a desire to marry its father or its mother, this need imply anything more than a tender desire for close and permanent association with the parent. Affection is not necessarily in any sense sexual, neither in character nor in origin. It is to be found among the members of all higher organisms that live in herds; it is to be found in the tender relations of parents to offspring, not less than in those of offspring to parents. Affection belongs to the protective instinct, and develops both among those who give and among those who receive it, whether that protection relate to the herd, to the individual, or to the species. There are no grounds, then, for concluding that in childhood "an incestuous love-choice is in fact the first and the regular one." Nor can we conclude that when the child "shows at the beginning of life no disgust for excrement," he is passing from the oral to the anal stage, characterised by curiosity and cruelty, or, to use Freudian language, by sexual inspection and sadism.

A similar criticism is applicable to the so-called "castration complex." No one will deny that some young boys, when they see the female genitalia for the first time, may conclude that castration has occurred in the other sex, and that some young girls may arrive at a corresponding conclusion. But does the evidence warrant our supposing that this is a *necessary* belief occurring in all (or even in most) children, modifying an equally universal Œdipus complex, and playing an important part in the mental development of the average normal human being?

His Definition of Instincts.

Both hunger and sexual feeling are what the psychologist terms "appetites." But for Freud the essence of an instinct is that the stimulus should arise within the organism. Consequently he asserts that hunger and thirst are the *typical* examples of instincts, and that sexual desire is likewise an instinct because it arises from distension of the vesiculæ seminales and the like. Freud divides the instincts into sexual instincts and ego-instincts—the species-preservative and the self-preservative instincts. I will not stop to consider how difficult it is, under this classification and definition, to range such clearly instinctive reactions as fighting, constructiveness, self-display, which with their associated affects are as much concerned in preserving the individual as in preserving his species. Nor will I do more than point out in passing that the apparent opposition between preservation of the individual and preservation of his species is biologically unjustifiable. The two are inevitably inter-dependent, otherwise their respective efficiencies would suffer. Freud is not any happier by his classification of instincts elsewhere into life- and death-instincts, the former making for the preservation of the species, the latter heading for the death and disintegration of the individual, but becoming sublimated, through the agency of the life-instincts, to the "will to power" and cruelty.

Were Freud pressed with the objection that suckling is not a sexual but an ego (or self-preservative) instinct, he would retort (as he has indeed said) that it is only later in the life of the individual that sexual instincts are detached from the self-preservative instincts, as—he would say—the stage of auto-erotism (by which he only means interest in the self) passes to the love of (by which again he means merely interest in) external objects. Elsewhere Freud even suggests that all instincts are qualitatively identical. But such a reduction of instincts to an unknowable common origin is, at best, only of philosophical interest and is surely most improbable.

The Libido.

The Freudian doctrines are fundamentally derived from the supposition that all "wishes" and "desires," by which is psychologically meant all conative activities, of any importance, are dependent on the exercise of the sexual instincts, and that the energy

[14] Introductory Lectures on Psycho-analysis, pp. 263, 264.

of the whole mental and nervous system is like a fluid which can be dammed up and drained, now in one direction, now in another. I know of no adequate psychological or neurological evidence in support of this view. Freud employs the term "libido" to designate the force by which the sexual instincts achieve expression. Only the sexual instincts have *libido*; the self-preservative instincts have to be content with ego-*interests*. The libido is never changed, we are told, into ego-interests. Whether, and if so how, the ego derives its activities, save from those of the instincts which it controls, is left unsaid. Sometimes the libido seems to be an innate instinctive force incessantly battling with the ego. Sometimes it is obscurely described as the investment of energy directed by the ego; at others—e.g., in auto-erotism—as inflating the ego with its own energy. Sometimes, as in anxiety, the ego is described as flying from its libido; at others as censoring and blocking the discharge of the libido, which is thus withdrawn to as a subconscious. Sometimes the ego is regarded the great reservoir from which the libido flows out and returns.

THE "PLEASURE PRINCIPLE."

Such fantastic creations are by no means the sole components of Freud's superstructure which the psychologist must oppose. His belief that pain is associated with increase of excitation and with the damming up of energy, whereas pleasure is associated with opposite processes, is obviously not in full accordance with the facts. His belief that the infant only responds to the "pleasure-principle" and that only later does it follow the "reality-principle," is equally unacceptable. In the first place, it is untrue to suppose that the primary motive of action is the search for pleasure. Pleasure maintains action and re-establishes a situation; it does not originate action. Secondly, from its very birth the infant is brought to face reality. It cannot suckle just when it likes, it has to submit to the regular routine of toilet, it is put to sleep and awakened at regular hours. There is no stage in its extra-uterine life when it can be said to obey one of the two so-called principles without obedience to the other.

THE UNCONSCIOUS AND THE SUPER-EGO.

In his justifiable efforts to endow the unconscious with characters different from, and more primitive than, those of the conscious, Freud has practically identified the unconscious with the sexual libido and has urged that both act irrationally merely according to the pleasure principle. Of late, however, he has seen the necessity of withdrawing from this attitude. Contrasting the ego with the "*es*," as he now calls it—i.e., the conscious self with the unconscious—Freud has been forced to posit an ego-ideal or a super-ego; in other words, a moral factor dominating the ego, a voice of conscience above the ego, which exercises the same functions as the unconscious censorship (in the "preconscious") exercises on dreams. He has now come to recognise the existence of an "unconscious conscience"—apparently an unconscious state of the super-ego. Indeed, he supposes that the *es*, or unconscious, is the source of the super-ego, although in the service of the super-ego the ego comes into conflict with the *es* in overcoming the Œdipus complex. He also suggests that the super-ego, or conscience, acquires its characteristics of authority and affection, because it is created by the first relations of the libido of the *es*—namely, towards the two parents—when "introjected" into the ego.

Who but a blind follower, totally untrained in psychology, could adopt such a wild, useless farago of generalisation? Freud sees sex everywhere, and attends to little else. Morality arises from the Œdipus complex; speech is perhaps derived from sexual communication; suggestion is dependent on sexuality; obstinacy, meanness, and orderliness in adult life result from the holding back of stools in infancy; intense burning ambition occurs among those who formerly suffered from enuresis!

THE ABUSE OF SYMBOLISM.

It is as easy to deny all this *in toto* as to accept it *in toto*. There are few statements of Freud which are wholly untrue. But his lack of psychological training, the need to maintain his position as the head of a school and his own brilliant and erratic personality, combine to make his teachings ridiculous in the sight of all free-minded men. Let us take, as a further instance, Freud's exaggerated reliance on symbolism as a means of interpretation. Who can deny that symbolism often provides a source of escape from, a substitute for, unwelcome ideas? But let us examine the list of symbols given by Freud for the genital organs. For the male organ, the symbols include sticks, umbrellas, poles, trees, knives, daggers, sabres, guns, revolvers, taps, watering-cans, springs, telescopes, nail files, hammers, balloons, aeroplanes, reptiles, fishes, hats and cloaks, machinery, keys. For the female organ, the list comprises pits, hollows, caves, jars, bottles, the mouth, ships, pockets, cupboards, chests, rooms, windows, doors, gates, wood, paper and all other materials, together with objects made therefrom, snails, mussels, churches, apples, peaches, and other fruit, landscape with rocks, gardens, and flowers, jewel cases, and shoes. And these lists are admittedly not complete! With such a vast choice of symbols, what dreams in a normal person, what associations in a case of psychoneurosis cannot be given and assured a sexual significance, when once the analyst has made up his mind to find it?

Is it conceivable that different analysts, laying different stresses on the relative importance of the Œdipus complex, the castration complex, the death instinct, the desire for re-birth, the love of mastery, the play of purposive, prospective functions—all accepted in greater or less degree by the Freudian school of to-day—will independently give the same interpretation to the same dream or symptom? That the interpretation satisfies the dreamer or patient is, I repeat, no proof of its accuracy. A man may be convinced of sin without having actually committed it. Days, weeks, or months of daily intimate intercourse with a psycho-analyst, and the increasing influence and prestige (in Freudian language, transference) which he exercises over his subject will lead the latter to accept any system of explanation as satisfactory and correct.

THE PLAY OF SUGGESTION AND CONVICTION.

Those who wish to see to what lengths Freud and his followers are prepared to go in bringing such suggestion to play on their subjects should read his published "Analysis of a phobia in a 5-year-old boy."[15] So innocent Freud seems of the dangers of suggestion that he can write: "If I say to you 'Look up at the sky and you will see a balloon,' you will find it much more quickly than if I merely tell you to look up and see whether you can see anything."[16] Freud observes that "an experienced physician does not meet his patients unprepared and, as a rule, asks of them not elucidation but confirmation of his surmises."[17] In other words, the psycho-analyst is so certain of his own interpretation of the patient's revelations that his main task is to convince the latter of the truth of them. "Denial at the beginning," says Freud, "should not mislead the physician; every resistance is finally overcome by firmly insisting on what has been inferred and by emphasising the unshakable nature of one's convictions."[18]

Surely this attitude is the explanation of Freud's earlier insistence that "an infantile history of seduction by adults or other older children" was characteristic of, and chiefly, if not wholly, responsible for subsequent psychoneuroses. A few years later Freud had to admit that many accepted histories of such early seduction were found by him to be purely fictitious and imaginary. Is it not likely that Freud's conviction,

[15] Collected Papers, vol. iii., pp. 149–289.
[16] Introductory Lectures on Psycho-analysis, p. 365.
[17] Collected Papers, vol. i., p. 224.
[18] Ibid., p. 228.

based on a few possible real instances, led him to suggest (no doubt quite unconsciously) to his hysterical patients that they had been violated in early life and that these patients had finally accepted the suggestion? But Freud is satisfied with relating such seduction phantasies—as they turn out to be ("memory romances," as he calls them [19])—to the repressed memories of other infantile sexual experiences on which they were founded and to the hysterical symptoms into which these had become transferred.

Members of the psycho-analytical school are equally subject to suggestion, when it assists their faith in their master. To my own knowledge a purely fictitious dream was jokingly related in all seriousness to one of the ablest of Freud's followers. He immediately assumed that it was true and proceeded to interpret it in the light of sexual symbols, just as a servant girl might do by consulting her dream-book. So convinced was he of the truth of the dream and its interpretation that he published it in one of the many able essays he has written in defence of the Freudian position!

Take such a dream as the following, offered by Freud, as an example of symbolic interpretation: "*The dreamer met his sister with two friends who were themselves sisters. He shook hands with these two, but not with his sister.*" We are told that there was an actual episode connected with this in the dreamer's mind. Left to free association, his thoughts passed (under the influence of how much suggestion we can shrewdly guess!) "to a time when his observations led him to wonder why a girl's breasts are so late in developing. The two sisters, therefore, stand for the breasts; he would have liked to grasp them with his hand, if only it had not been his sister."

Or take the following dream: A woman who had been married for ten years dreamed about herself, her husband, a friend of about her own age and her fiancé to whom she had just become engaged. Freud interprets this dream to mean regret on the part of the woman for having married so early; had she waited she might have done better. He admits that the dream offered no association justifying this conclusion! "... the dreamer had not been aware that she had such disparaging thoughts about her husband; she did not know why she should so disparage him." But "there occurs to us almost spontaneously," says Freud, "the following [i.e., the above] construction of the latent dream-thoughts for which the manifest dream is a highly-distorted substitute"! Why? Because in the dream "references to time are noticeable at several points"; action is "taken too soon and in too great a hurry." "*Going to the theatre* obviously stands for marriage. *Getting the tickets too soon* is, in fact, a direct substitute for 'marrying too soon,'" because after marriage a woman can see things at the theatre which are forbidden to the unmarried girl! [20]

We need no further illustrations of the fact that the psycho-analyst is so convinced of many of his interpretations that he feels no necessity to consult his subject. He has no hesitation even in revealing the innermost thoughts and unconscious "wishes" in the lives of dead and imaginary characters, Leonardo da Vinci, Hamlet, and others.

FREUD'S CONTRIBUTIONS TO PSYCHOLOGY.

Let it not be supposed that Freud's labours have been in vain and that we must reject all his work because we refuse to accept his wild, unfounded generalisations. No one has done more valuable service than he in insisting on the dynamic conception of mental processes and on the importance of early experiences alike in the education of the normal adult, in dreams, and in the neuroses. He has rightly stressed the principles of fixation and regression—i.e., arrest during development and return to an earlier phase of development—for the light they throw on many mental disturbances. He has greatly advanced psychotherapy by emphasising the enormous influence of repression and censorship and the importance of symbolism. His analysis of the processes characteristic of the dream are of special value,—his description of how the dream is determined by condensation, displacement, secondary elaboration, regression, opposite meanings, prominence of visual imagery, &c.

Most people would probably credit Freud with definitely establishing the existence of unconscious mental processes. He himself finds "incontrovertible proof of the existence" of the unconscious—because, forsooth, psycho-analysis "works" and because we need it as an explanation.[21] But we must remember that a hypothesis may still remain a hypothesis, however valuable it may be. I do not myself see how the existence of unconscious mental processes can ever be *proved*. Some reject the unconscious mind because they regard it as inconceivable. But if the notion that it conveys works better than any other, we have as much right to employ it as the physicist has to credit the ether with equally inconceivable characters.

Despite our agreement with Freud in his distinction between "preconscious" and "unconscious" processes, we may justly criticise him for his familiarity with the latter. He claims to know as much about the nature of the unconscious mind as the ordinary religious man claims in regard to the mentality of God. Anthropomorphism in religion is hardly less justifiable than what may be correspondingly termed "egomorphism" in psychology. If nothing is more certain than that the "mental" processes in any existing ultra-human purpose and direction must be quite different from our own, and that it is therefore absurd to speak of God's feelings, wishes and motives in human terms, we must also realise the impossibility of speaking, as Freud does so confidently, of unconscious ideas, unconscious wishes, and the like in terms of consciousness. If only Freud had taken the trouble to define more adequately what he meant by wishes, by ideas, and indeed by sexuality, instinct, anxiety, love, and other terms, and if only he had endeavoured to abide even for a few consecutive years by these definitions, how different would have been the result! But we should have exchanged the wild visionary, the inspired seer, for the duller, more temperate man of science.

Let us, then, not part from our subject without giving Freud his due. In him we recognise a great genius who has contributed vastly to the advance of psychopathology, but whose inspirations have been tainted by his peculiar temperament and have not been adequately controlled by criticial intelligence and by a knowledge of normal psychology. A brilliant theory, even if it be wrong and impossible, has a stimulating influence in arousing opposition and in encouraging the discovery of new facts that will refute it. The pity is that its acceptance is often so wrapped up with suggestion, faith, and worship that an appeal to reason becomes ineffective.

[19] Ibid., pp. 272 ff.

[20] Introductory Lectures on Psycho-analysis, pp. 1026, 160.

[21] Collected Papers, vol. iv., p. 98 ff.

ROYAL LONDON OPHTHALMIC HOSPITAL.—The chief facts recorded in this year's report are, first, that plans have been drawn up to build the extra nursing accommodation required (these have met with the approval of King Edward's Hospital Fund and £2500 towards the £10,000 needed has already been collected); secondly, that this was the first hospital to be equipped with a wireless installation by the *Daily News* fund; and thirdly, that the hospital is indebted to the Medical Research Council for its gift of a mercury-vapour lamp by means of which artificial sunlight treatment is now being provided for those cases likely to derive benefit. This has proved a valuable addition to the resources of the hospital, as was apparent from papers read by Mr. C. Goulden and Dr. W. S. Duke-Elder at the annual congress of the Ophthalmological Society held recently.

THE PATHOLOGICAL ACTION OF LIGHT UPON THE EYE.

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PART II.*—ACTION UPON THE LENS: THEORY OF THE GENESIS OF CATARACT.

SINCE Brisseau, in 1705, first drew attention to the fact that cataract was nothing more than an opaque lens, a very large amount of work and a still larger amount of speculation have gathered round the cause of the formation of the opacity, but it is only of recent years that the fundamental aspects of the problem have been approached. From time to time light and heat have been stigmatised as the cause of one or other of the forms of this disease, often on somewhat indirect and circumstantial evidence. The main cause of the popular rejection of this hypothesis would appear to be the comparison of the dramatic effects produced in the test-tube or in the laboratory animal with the gradual process which occurs clinically, and a failure, until recently, to consider the more intimate beginnings of the process instead of the gross end-results. In a comprehensive theory of the genesis of cataract it would seem that, with certain exceptions to be pointed out later, the fundamental cause of cataract in all its forms may be traced to the incidence of radiant energy directly on the lens itself.

Although recognised as of different nature because they are appreciated by different receptor mechanisms, and although embracing phenomena apparently so diverse as light, heat, and chemical and electrical effects, the whole of the energy spectrum is of fundamentally identical character, believed to be electromagnetic vibrations travelling in the hypothetical ether, differing only in the length, frequency, and amplitude of their waves. All radiations transfer energy to the substances which absorb them; the longer waves by increasing molecular movement produce primarily a thermic effect, the smaller ones, whose frequencies correspond to the intra-molecular oscillations, by increasing atomic motion, induce direct atomic disintegration with consequent photo-chemical and photo-electrical effects. Every substance absorbs radiant energy to a greater or less degree, and its reaction to that energy is in the last analysis identical, and is dependent upon this absorption, whereby energy is transferred to its molecules or their parts with the result that they are shaken apart. Apart from this there is no evidence of any specific action peculiar to any wave-length.

1. *The Radiant Energy Affecting the Lens.*

In order to reach the lens incident radiant energy must first traverse the cornea and the aqueous, and since the first of these is the more absorbent, the nature of the radiations to which the lens is exposed is determined by the transmission of this structure. The transmission of the cornea in the mid-spectrum has already been discussed in the preceding article; in addition, like all living structures, it is transparent to the very long and the very short wave-lengths at either extreme end of the known spectrum. For all practical purposes it may be taken that the lens is reached by incident radiation of wave-lengths of the order of 10^{10} Angström units (electrical oscillations), those in the region 20,000 to 3000 (short infra-red, visibles, and long ultra-violet), and those of the order of one A.U. (X rays, gamma rays).

Having reached the lens one of five things may happen to the energy represented by these rays. It may be (1) absorbed into the energy system of the lens, causing changes therein; (2) transmitted according to the laws of refraction, without affecting the lens; (3) dispersed by the particulate structures in the lens, whereby its path is changed; or (4) it may induce fluorescence; while (5) a small fraction is reflected from the surfaces.

It is with the absorbed portions of the incident energy that we are primarily interested in the consideration of its possible pathological effects upon the lens, since only these can exert an effect, deleterious or otherwise, upon it; and those rays between 20,000 and 3000 will concern us most, inasmuch as the spectra of all ordinary sources lie between their limits. At the upper end of this region, in the infra-red, the percentage absorption has been investigated by Hartridge and Hill, whose results corroborate the earlier conclusions of Aschkinass and Vogt. Above 20,000 A.U. no rays, and above 14,000 A.U. practically no rays get through the cornea; from 13,500 to 11,000 the lens absorbs about 25 per cent. of the incident energy; thereafter, apart from a band at 9750, it is to all intents and purposes transparent, especially from the commencement of the visible spectrum until we come to the long ultra-violet at 4000. A very large number of experimenters have made determinations of the limit of transmission and the commencement of absorption in this region, and it has been established that in the normal adult absorption in quantity begins at 4000 and is largely complete at 3500 (Parsons, Martin), although transmission is slight down to about 3200 (Shoji, Glancy). The limits vary considerably, however, with age and with the amount of pathological sclerosis present; thus, in the young the lower limit is 3055 (Shoji) or 3100 (Schanz), in the aged the upper limit is frequently 4200 (Hallauer), while in the cataractous lens absorption is marked well within the violet—4400 (Graham). In both cases this rise can be correlated with a corresponding rise in the absolute and relative albumoid content of the lens, which substance, being the most strongly absorbent of its constituents, largely determines the absorption of the whole.

In the average normal adult, therefore, a large proportion of the rays between 14,000 and 11,000, and between 4000 and 3200, and practically all the rays between 3200 and 3000 are absorbed; those of the first two spectral regions will produce a potentially pathological thermal effect, those of the third will produce an abiotic effect as well as a mild thermal one. The fact that abiotically active rays are so absorbed is seen in the observations of Schulek and Birch-Hirschfeld, who found that an exposure to ultra-violet, which in the normal rabbit left the retina unaffected, produced typical abiotic changes in the retina of the aphakic rabbit.

A considerable amount of transmissible light is dispersed in its passage through the lens—a Tyndall effect. Van der Hoeve (1918) showed that the lens is an optically heterogeneous substance, in which solid particles, many of them in Brownian movement, can be seen on dark-ground illumination. Light is dispersed from these particles, partly polarised, but with its wave-length unchanged. The short waves are most affected in inverse proportion to the fourth power of their wave-lengths (Rayleigh's law)—i.e., 16 times more ultra-violet of wave-length 4000 will be dispersed than infra-red of 8000. This deflection of the shorter waves accounts in part for the protective function of the lens over the retina observed experimentally by Birch-Hirschfeld, but since the wave-lengths are unchanged it can have no pathological action on the lens itself apart from the action of the incident light, except in so far as its path in the lens is lengthened, and the amount absorbed will, therefore, be proportionately increased.

Fluorescence is a phenomenon whose intimate nature is little understood. When light passes through a fluorescing substance the particles of the substance become light sources themselves, emitting light of wave-length different from that of the incident light, preponderatingly longer, but also shorter. Measuring by Newton's method of crossed spectra, Schanz (1909)

* Part I. appeared in THE LANCET last week.

found the region of maximum fluorescence in the lens to be from 3500 to 4000. The effect of this phenomenon is regarded differently. Considering that its production implied absorption, Schanz looked upon it as deleterious; in any case, any shorter waves so produced will be more easily absorbed. On the other hand, from the work of Burge (1915), who correlated a decrease of fluorescence with an increase in the coagulability of lens proteins, it is probable that it may be looked upon rather as a protective mechanism, whereby active short waves, which might induce coagulation, are changed largely into long (visible) waves which are less active, by which means their energy, being in a more transmissible form, is the more safely got rid of.

2. *The Concentration of Radiant Energy in the Lens.*

From a pathological point of view the concentration of incident radiant energy in its passage through the lens is of primary importance. Two opposing factors are at work: a concentrating effect due to refraction by the optical system of the eye, and a dissipating effect due partly to the specific absorption of the media and partly to irregular loss incurred by reflection in passing between media of varying refractive indices, by dispersion in passing through the substance of optically heterogeneous media, and by spherical and chromatic aberration. The loss can be calculated with fair exactitude. With regard to the first factor there is no specific absorption by the media of the eye apart from that due to a dilute watery solution of protein, whose magnitude has been calculated by Aschinas (1896), Luckiesh (1913), and Hartridge and Hill (1915). Most of the energy is absorbed in the anterior part of the eye, the absorption rapidly decreasing exponentially as the depth of the layer increases. The loss by general dispersion may be taken as 10 per cent. of the incident energy.

The total density of energy in the lens depends further upon the size of the pupillary aperture and the size of the illuminating source. For small and intense radiants, such are used experimentally and clinically, the source may be taken as of constant area corresponding to the circle of diffusion, and the intensity of energy concentration varies as the inverse square of the distance from the eye (Charpentier). For sources subtending a relatively small solid angle there is a uniform mean energy density throughout more than half the path through the eye (Luckiesh), since the absorption and dispersion of energy in the media counteract fairly exactly the concentrating effect of refraction; for these sources, there is, therefore, no serious concentration in the lens. But for sources of large extensity the distribution is widely different, since the ratio of energy density just behind the pupillary region varies approximately as the solid angle subtended by the source. Thus, for a source subtending the maximum solid angle of 120°, the energy density in this region is greater by several million times than with a small source—this, it is to be noted, when the energy intensity at the retina is the same, the retinal image is of the same brightness, and the spectral character of the illuminant and the intensity of the illumination are the same. Thus, while a source of small area, as is used experimentally, may be harmless, a similar large area, as the sky, a snow-field, the desert, or a sheet of molten glass or metal entails an enormous energy concentration in the region of the lens. This is a consideration which has been largely overlooked in the interpretation of experimental work undertaken to elucidate the pathogenesis of cataract.

3. *The Pathological Action of Radiant Energy on the Lens.*

(1) *Action on the Lens Capsule.*—The longer wavelengths produce a thermal action on the lens capsule which can readily be obtained experimentally. Tissue death is induced by coagulation of the proteins, with subsequent exfoliation of the cells.

When in sufficient intensity, the shorter wavelengths produce a typical abiotic effect (Hess, 1909; Martin, 1912; Verhoeff and Bell, 1916). This is not obtained unless a critical exposure is given, since with great intensities of radiation the cornea turns opaque and protects the underlying structures, while with lesser intermittent exposures the factor of physiological repair in the time interval comes into play. After short exposures swelling of the cells is the only change noted; further intensities involve the appearance of the typical eosinophilic and basophilic cells associated with abiotic reaction; more prolonged and intense exposures induce nuclear pyknosis. Round the periphery of the exposed area, just underneath the pupillary margin, there is a zone of cellular proliferation surrounded by an area of marked karyokinetic activity. This has been variously explained as being due to compression of the marginal cells by the central swollen cells (Hess), which cannot readily explain the nuclear activity; to stimulation due to submaximal damage (Martin), an assumption difficult to accept since no short waves can penetrate the iris overlying the affected area; and to the action of toxic substances diffused from the injured iris cells (Verhoeff and Bell), which does not explain its strict localisation. In all probability the changes are due to stimulation of cellular activity by the heat which is absorbed in quantity by the iris pigment, which in this region comes into direct contact with the lens capsule.

(2) *Action on the Lens Substance.*—The action of radiant energy upon the lens substance is to produce opacity, or so to increase the lability of its colloidal system that the formation of opacity is more easily produced by other influences. Since the fundamental happening in the formation of the opacity of cataract is the coagulation of the lens proteins, a brief résumé of their nature and their reactions is essential to the understanding of the problem.

The Lens Proteins.—These have been investigated by Laptschinsky (1876), Morner (1894), and more recently with more refined methods of purification by Jess (1913). They are four in number: (*a*) "albumoid," a water-insoluble protein found especially in the nucleus; two water-soluble proteins found especially in the cortex—(*b*) α-krystalline, mainly in the outer cortex, and (*c*) β-krystalline, mainly in the inner cortex; and (*d*) albumin in small quantity.

Throughout the body generally active metabolism is closely associated with the presence of cystein-containing proteins; this amino-acid is found in large amount in β-krystalline, in less amount in α-krystalline, while the "albumoid" contains practically none. Correspondingly, with age the insoluble protein (albumoid) increases and the soluble proteins (krystallines) decrease (Jess, 1920); this process is thus accompanied by a gradual and parallel diminution of the cystein content of the lens with advancing years (Goldschmidt, 1917). A similar process occurs in cataract, where combined cystein may be partially or completely absent, while the albumoid content is increased (Jess; Reis, 1912). It is to be noted that the whole of the SH-reacting compound is not bound up with protein; a part of it is dialysable (Abderhalden and Wertheimer, 1922), which part has been recognised by Goldschmidt (1924) to be glutathione.

The Lens Metabolism.—Both physiologically and pathologically the lens is a sluggish tissue, but to live and to maintain its transparency it must possess a metabolism, which involves primarily a respiratory mechanism. The presence of this mechanism has been definitely established and the oxygen up-take measured (Adams, 1925). Throughout the body there are two main types of respiratory mechanism—an external one whereby respiratory gases are mediated directly by the blood stream, and an internal one, recently elucidated by Hopkins, whereby a balanced autoxidation mechanism is maintained in a constant chemical equilibrium by an oxidation-reduction system of an SH<—>SS type. Loeb Cascio (1922) claims to have demonstrated the presence of oxidases and catalases in the lens, but, while these may have a secondary activity as in the oxidation of certain fatty acids (Ahlgren), it is practically certain from the

work of Goldschmidt (1924) and Adams (1925) that the internal metabolism of the lens is carried on by an autoxidation system wherein glutathione acts as a hydrogen donator, which reduces the hydrogen acceptors, and β-krystalline acts as a thermostable residue which reduces the glutathione after it has been oxidised. The lens is an avascular structure, and this internal system, which in other tissues is of secondary importance, presumably becomes here the central fact in metabolism, and if it is destroyed or partially put out of gear it would seem to follow that the transparency of the lens must suffer. Accordingly, we should expect to find, as Goldschmidt (1924) claims to have demonstrated, that the normal lens has a higher glutathione content than other tissues and that corresponding with the decrease in cystein—i.e., krystalline—content with increasing age, the reduction power also decreases. Similarly, in the cataractous lens, which is poor either in cystein or in glutathione or both (Adams), the reducing power decreases with the state of maturity. Running parallel with these changes, we have already noted the increase of absorption of light by the lens in these two conditions; while, connecting the two sets of phenomena, Adams has shown that the glutathione content, and therefore the metabolic efficiency of the lens, is lowered considerably after exposure either to heat or to ultra-violet rays.

The so-called "lipoid substances" (phospholipins, sterols, &c.) in the lens probably have some effect on the working of the autoxidation system by increasing the rate of oxidation (Meyerhof, 1923). It is significant that, according to the findings of Goldschmidt (1922), these substances are at a minimum about the decades 40 to 60, and that in the cataractous lens they are withdrawn from solution, and therefore from activity, and deposited as crystalline or amorphous particles (Valetin, 1919), which may be macroscopically evident.

The Coagulation of Protein.—According to the most recent ideas, proteins may be changed from the colloidal to the particulate form by two distinct processes: precipitation and coagulation. Precipitation, which is brought about by the action of concentrated salts as ammonium sulphate or by alcohol, is a reversible and purely physical change whereby aggregates of chemically unchanged particles are thrown out of colloidal solution in a condition capable of reversion to their original colloidal state; with this we are probably not concerned in the development of cataract. Coagulation, on the other hand, is a complex process which takes place in two stages: (1) denaturation (Chick and Martin, 1910), whereby the natural protein is chemically altered to a form in which it is readily coagulable; (2) agglutination, a physical process whereby coagula are formed by flocculation of the denatured particles.

The intimate nature of the primary chemical change of denaturation is not yet cleared up. Chick and Martin conclude that it is a reaction between the natural protein and water. This, according to Pauli (1910) and Robertson (1911), is a dehydration, involving the formation of an internal anhydride by the elimination of H_2O between the terminal NH_2 and COOH groups of the protein chain, with a possible tautomeric keto-enol transformation in the peptide linkages. Harris (1922), however, has brought evidence to show that it is more probably a hydrolysis involving the production of a sulphydryl group from the thiopeptide linkages. In the development of cataract a considerable amount of hydrolysis of this type takes place, since in the aqueous of cataractous eyes deposits of tyrosine seem to be frequently found (Burdon-Cooper, 1914), while the pigment found in the so-called "black cataract" is melanin, an oxidation product of tyrosine (McHardy, 1882).

From the point of view of this thesis there are three aspects of this reaction that are of especial interest: the factors causing it, its time relations, and the influences which may aid or accelerate its development. Coagulation appears to be brought about under suitable conditions by any form of radiant energy, and, moreover, by mechanical stress. The most common and best known form in which this energy is received is heat (Chick and Martin); visible light also brings it about (Young, 1922); coagulation is also induced by ultra-violet (Dreyer and Haussen, 1907; Bovie, 1913; Clark, 1922); and by radium (Dreyer and Haussen, 1907; Fernan and Pauli, 1915). In the case of the shorter wave-lengths the primary action of denaturation is not identical with that caused by the longer heat waves. Thus in place of the high temperature coefficient which characterises the reaction to heat, denaturation following exposure to ultra-violet light, like other photochemical processes, has a very low temperature coefficient. In the last analysis, however, both are identical, and the second process of agglutination is never photochemical, but is a spontaneous consequence of the thermal or photochemical denaturation which precedes it. Coagulation is further produced by energy imparted to the molecules of the protein by mechanical shock, such as agitation, or by the application of any undue strain, as on the surface of expanding air bubbles or any marked double phase such as is produced in the mixing of two immiscible liquids, or the application of great hydrostatic pressures (Bridgman, 1914). As will be seen, all these forms of energy may be correlated to form a comprehensive theory of the development of cataract in its many clinical forms.

The time factor in the process of coagulation has often been brought forward as an objection to any theory of cataract formation by the direct influence of radiant energy. On comparing the coagulation of proteins in the test-tube or the experimental production of lenticular opacity in the laboratory with the extremely slow and gradual development of the usual forms of cataract, and even of such forms as glass-blowers' cataract, it has been felt that the difference in time puts the two in entirely different categories, and has led to the theory at present generally accepted—of indirect malnutrition. Such an objection, however, does not take cognizance of the chemical nature of the processes involved. Chick and Martin have shown that the process of denaturation is a chemical process of the mono-molecular order, and that upon it the effect of temperature is merely acceleratory. According to these observers, it is an orderly time-process, influenced by temperature according to a logarithmic law which is represented fairly exactly by the equation of Arrhenius, and the so-called "coagulation temperature" of various proteins merely depend on the extremely high temperature coefficient (1·91 per 1° C. for albumin) possessed by the reaction. With rising temperature a critical point is reached at which the energy supply is sufficient to impart a velocity capable of completely overcoming the existing forces tending to stability, and the reaction, hitherto slow, suddenly becomes so rapid as to appear almost instantaneous. Incident energy, therefore, in the form of heat, light, &c., in sufficient intensity acts as a catalyst to the chemical action of denaturation, without which it would proceed infinitely slowly. On this ground alone the time objection is rendered invalid.

There is, however, another factor which probably is of more importance. The two processes of denaturation and agglutination which together constitute coagulation are distinct, and while under the usual experimental conditions they occur practically simultaneously, they may be separated by a time interval of theoretically infinite duration. The influx of radiant energy may induce denaturation and induce it over a very long time interval, and the denatured protein may then remain unagglutinated, leaving the medium of which it forms part transparent until such time as suitable conditions induce flocculation and consequent opacity. It is here in all probability that any influence of malnutrition may

play a part in cataract formation as a secondary factor. Thus Mond (1922) has shown that after ultra-violet radiation, such as will not produce coagulation, proteins show definite physical and chemical changes, and exhibit a decrease in stability, becoming more labile and more readily coagulable by various agencies. Correspondingly in the lens Burge (1916) claims that if a lens, after exposure to ultra-violet radiation which left it still clear, be immersed in certain salt solutions of concentrations which left the normal lens unaffected (0·1 per cent. CaCl) it turned opaque. The clear and apparently unchanged lens is therefore modified in such a way by radiation that its proteins are readily coagulated by small changes in the salt concentration of the medium in which it lies. An analogous clinical occurrence is the fact that in India, where the eye is exposed to excessive solar radiation and where cataract is common, the lens while yet apparently normal frequently is darkly pigmented with melanin (see Collins, 1925), an oxidation product of the hydrolysis of protein. These considerations may be compared with the significant observation of Adams (1925), that after exposure to heat or ultra-violet radiation the lens, while yet clear, showed a decreased glutathione content. These two considerations should be viewed in the light of the fact that in the lens, possessed as it is of a very sluggish metabolism, the factor of physiological repair will not come into play as evidently as in a more active tissue, and slight degrees of submaximal damage will therefore tend to become largely additive.

The main factors influencing the incidence of coagulation are the concentrations of salts and hydrogen ions. The primary reaction of denaturation itself involves a change of reaction depending on the pH of the medium, and the maximum rate of agglutination of the denatured protein occurs at the iso-electric point (Sörensen, 1911; Michaelis, 1911), because the state of dispersion of the particles is due to their mutually repulsive electric charge, which at the iso-electric point is neutralised. Correspondingly, Goldschmidt (1924) found that the reducing power of the lens was very sensitive to changes in reaction, disappearing if the medium was more acid than pH 7·0. He suggests that the most probable cause of all cataract other than traumatic is a gradually rising hydrogen-ion concentration, thus upsetting the autoxidation system. But the pH of the aqueous appears to be fairly constant at 7·3 to 7·5 (Meesman, 1924; Hertel, 1921), and in cataract it has been invariably found to be alkaline (Burdon-Cooper, 1914). In the rabbit the pH of the two is the same, and with an alkaline aqueous an acid lens is at any time unlikely; while, therefore, it would seem improbable that the reaction is of primary importance, its influence as a secondary factor is undoubted. Thus, for example, Hertel (1921) found in a case of diabetic coma a pH as low as 7·02 in the aqueous.

The other secondary factor of great importance is the salt concentration. In the process of agglutination the electrolytes act by altering the reaction of the protein-containing medium, or by neutralising or increasing the electric charge carried by the protein particles according as the charge on the protein is of similar or opposite sign to that carried by the more potent ion of the salt. Schanz (1915) found that the addition of salt to pure protein increases its power of absorption of light, and the great effect of the presence of salts, particularly calcium salts, upon the formation of lenticular opacity by ultra-violet light found by Burge has already been alluded to. In addition, other substances seem to have a similar sensitising effect on coagulation by light, the most interesting of which are glucose and acetone (Schanz, 1915; Young, 1922).

Apart from this influence in association with light, salts can have no direct precipitating action on the lens protein in vivo, since they could never accumulate in sufficient concentration. Thus it requires a 2·25 per cent. solution of calcium salt (Nelson, 1923) or 5 per cent. of glucose (Deutschmann, 1887) to induce opacity in the lens. They have, however, a further and very important influence in determining osmotic change. The lens, surrounded by its capsule, forms a separate physico-chemical system from the aqueous. Its chemical composition is widely different, while its osmotic value is equivalent to a 1·2 per cent. solution of NaCl (Manca and Ovio, 1898), whereas that of the aqueous is equivalent to a 0·9 per cent. solution. Owing to the tonic pull on the capsule by the ciliary muscle the internal tension of the lens is kept at a higher level than that of the aqueous, and, therefore, while fluid may pass out by filtration and diffusion, it can only enter by osmosis. To form an intelligent picture of the maintenance of the intra-vitam equilibrium we must postulate some forces acting after the manner of a semipermeable membrane, and work must constantly be being done by osmosis acting against the filtration pressure induced by the tonic, pull of the ciliary muscle. That this mechanism is the lens capsule is seen by experiment, for on damaging it experimentally (Hess, 1887), or in the operation for the maturation of immature cataract, or on rupturing it as in needling, the lens behaves as does the dead lens—it puts on weight by the addition of aqueous, swells, and turns opaque. The normal mechanism is therefore deranged and aqueous will enter (1) if the difference between the osmotic pressures is increased; (2) if the internal tension of the lens is lowered or the intra-ocular pressure is increased; (3) if the vitality of the "semipermeable membrane" is lowered or its continuity broken.

The first will occur in certain diseased states as diabetes; the internal tension will fall with the loss of elasticity of old age; an increased intra-ocular pressure may act in absolute glaucoma; and the membrane is ruptured in trauma, while its vitality is lessened in debility and nutritional deficiences or under the action of light. This last does not necessarily depend on any gross pathological change such as we have noted to be produced by the massive radiation of thermal or actinic rays, but would appear to be a very widespread physiological phenomenon in nature. In its effect on the turgor of plants it is responsible for heliotropic curvature. In its preferential permeability the lens capsule resembles closely the red blood corpuscles; the potassium content of the lens is said to be 38·8 per cent., of which 0·6 per cent. is in solution as KCl, while in the aqueous there is the merest trace (0·03 per cent.) of this element. the potassium content of the corpuscles is 0·425 per cent., that of the serum 0·02 per cent. Ultra-violet radiation changes the "permeability" of the red cell and induces hæmolysis. The percentage of total potassium falls in the lens in cataract from the normal figure of 38·8 to 9·8, according to the analysis of Burge (1909), and the loss of soluble protein and glutathione in the cataractous lens has already been referred to. Both processes are presumably to be accounted for by diffusion through a membrane of altered permeability. It is more than probable, therefore, that the shorter wave-lengths derange the "permeability" of the capsule, and facilitate the interchange of water and salts.

The mechanism of opacity formation by this agency is, in the first place, the entrance of fluid in quantity sufficient to form vacuoles between the lens fibres; these being of a refractive index different from the lens substance disperse the light, and the lens, while its fibres are still clear, appears opaque. Later and more slowly coagulation of the proteins occurs, a process in which it is probable that one or other, or all, of the following factors act—mechanical strain on the fibres inducing denaturation, comparable to the effect on the surface of a soap bubble or at the interface between two immiscible liquids, a change in salt concentration and reaction, and a diffusion outwards through the now "permeable" capsule of the diffusible substances, which include both active parts of the respiratory system—the glutathione and the β-krystalline.

The conclusion of Part II. with bibliography will appear in our next issue.

A NOTE ON THE RELATIONSHIP BETWEEN DESTRUCTION OF TISSUE AND BACTERICIDAL POWER OF BLOOD.

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IN the course of research on the action of mustard gas on the blood of guinea-pigs and rabbits, serological experiments were carried out.

1. As regards alexin, these experiments showed that a fall occurred when guinea-pigs were subjected to mustard gas by inhalation and by subcutaneous injection. The fall of alexin was most marked in high concentrations such as 1 in 50,000 by inhalation, and also by subcutaneous injections, but less marked and transient in lower concentrations such as 1 in 200,000. It was further noted that this fall was in no way related to the number of leucocytes, for in these experiments any changes that occurred in the leucocyte count bore no relation to the fall in alexin.

2. As regards other antibody formation, if mustard gas be injected either before or together with antigen there is (*a*) no great prolongation of the latent period in agglutination production, and (*b*) a marked restraining influence on the production of antibodies.

3. If mustard gas be injected during the process of immunisation the restraining process is still present though lessened.

4. If mustard gas be injected at the height of antibody formation the normal fall is much hastened.

In view of these findings it was thought that a measurement of the bactericidal power of the blood would give a better indication of its defensive mechanism, and this study forms the subject-matter of this article.

Description of the Experiments.

The method employed throughout this research was a slight modification of that described by Sir Almroth Wright, based on research work done in collaboration with L. Colebrook and E. J. Storer and published in THE LANCET.[1]

The principle of the method is to implant graduated quanta of microbes into the blood (in vitro); to introduce the implanted blood into "slide cells"; and to incubate for 24 hours at 37° C., to allow surviving microbes to grow into colonies. These colonies are counted against similar implantations into blood hæmolysed with distilled water (thus destroying its bactericidal power) and incubated at the same temperature for the same length of time; this constitutes the control. Guinea-pigs were found to be more suitable than rabbits, as the strain of staphylococcus used was actively hæmolytic to rabbits' blood; in addition, considerable spreading of colonies occurred, which rendered their accurate counting difficult. The blood was obtained by cardiac puncture and afterwards defibrinated, as the employment of decalcifying agents was found by Colebrook and Storer considerably to reduce its power to kill staphylococci and streptococci.[2]

The suspension of microbes for implantation into the blood was prepared as follows:—

A required number of unit-volumes of the recipient fluid (Ringer's fluid to which a small quantity of serum has been added) was aspirated into a capillary pipette and finally one unit-volume of a 24 hours' broth culture of staphylococcus; this latter volume was then slowly expelled on to a filter paper and finally the recipient fluid driven to the end of the pipette and expelled into a small dilution tube; by aspirating and expelling several times, the whole of the "wash" is thoroughly embodied in the recipient fluid. From this "wash" further weaker washes were prepared. For each separate test one "slide cell" with four compartments was employed.

Into the first compartment was introduced 50 c.mm. defibrinated blood + 2·5 c.mm. 1/10th wash bacterial suspension.

Into the second compartment 50 c.mm. defibrinated blood + 2·5 c.mm. 1/20th wash bacterial suspension.

Into the third compartment 50 c.mm. defibrinated blood + 2·5 c.mm. 1/40th wash bacterial suspension.

Into the fourth compartment 50 c.mm. defibrinated blood + 2·5 c.mm. 1/80th wash bacterial suspension.

As a control a similar slide contained: 50 c.mm. defibrinated blood + 150 c.mm. distilled water + 2·5 c.mm. 1/80th wash bacterial suspension. This latter bulk occupied the four compartments, and as a full complement of colonies should develop, the larger area allowed counting to be easily and accurately carried out. This method of control was verified on a few occasions by an agar count.

Three methods of exposure to mustard gas were employed: 1. By inhalation; the substance was dispersed by heat and the concentrations used were 0·07098 mg. per litre (1 in 100,000), 0·14196 mg. per litre (1 in 50,000), and 0·3549 mg. per litre (1 in 20,000). 2. By subcutaneous injections of doses varying from 10 to 88·8 mg. per kilo body-weight. 3. By application to the skin of 40, 80, and 120 mg. per kilo body-weight. This was applied within a one-inch ring to the shaved backs of three guinea-pigs.

Results.

1. (*a*) After exposure to concentrations of mustard gas by inhalation, 0·07098 mg. per litre (1 in 100,000) and 0·14196 mg. per litre (1 in 50,000) for half an hour, it was observed that there was a tendency for the hæmobactericidal power to fall slightly 24 to 48 hours after exposure, and to rise again to normal or above after 72 hours. (*b*) After severe gassing—i.e., 0·3549 mg. per litre (1 in 20,000) for half an hour, a distinct increase in the hæmobactericidal power 20 hours after gassing was observed.

2. After subcutaneous injections of mustard gas in doses varying from 10 to 88·8 mg. per kilo body-weight, there is noted a distinct increase in the hæmobactericidal power within 24 hours of injection; the larger the injection the greater is the increase, 100 per cent. being repeatedly recorded after injections of 60 to 80 mg. per kilo body-weight. It may be noted that after large doses the majority of the animals died soon after blood was taken, but this very high bactericidal power of the blood is also recorded after the same large doses in animals which survived up to 72 hours.

3. After application to the skin, the hæmobactericidal power was observed to be markedly increased after 24 and 48 hours. As in the case of subcutaneous injections, the larger the dose the more marked was the increase in the hæmobactericidal power. Detailed results of all experiments are tabulated in appendices 1–17, but not included here for lack of space.

In view of the foregoing results, experiments have been carried out with a view to ascertaining the action of mustard gas on the whole blood in vitro.

Three tubes containing 1 c.cm. of blood to which mustard gas was added in the following proportions: 1 in 1000, 1 in 2000, 1 in 5000, were incubated at 37° C. for 24 hours. The blood containing 1 in 1000 mustard gas was almost black in appearance and of the consistency of treacle; the 1 in 2000 was much less dark in appearance and less viscid; the 1 in 5000 was the least altered in colour and viscosity. It was ascertained spectroscopically that the change of colour was due to the formation of acid hæmatin. In each case the oxygen capacity was found to be much lowered. Similar experiments carried out with 0·45 mg. of hydrochloric acid, an amount corresponding to a third of the quantity of acid which would have been produced by complete hydrolysis of the amount of mustard gas in the 1 in 1000 concentration, gave analogous results. Implantations of staphylococci in a medium of agar to which had been added the same proportion of mustard gas failed to develop owing conceivably to the acidity of the medium resulting from the hydrolysis of the added mustard gas.

Other previous experiments in which various other proportions of mustard gas were injected intravenously yielded spectroscopically no bands other than those of oxyhæmoglobin.

It is assumed that the difference exhibited by the hæmoglobin in these last experiments in vitro and those carried out in vivo can only be due to the greater action of the buffer substances in vivo. Hence, no comparison can be established and no deductions drawn. Finally, 150 mg. of undiluted hydrochloric acid were applied to the skin, and the results compared with those obtained by the application of mustard gas to the skin. In both experiments the hæmobactericidal power was found to be increased 24 hours

[1] THE LANCET, 1923, i., 365, 417, 473.
[2] Brit. Jour. Exp. Path., April, 1924, vol. v., No. 2.

after the application, but more so in the case of mustard gas. Further, in the case of hydrochloric acid, it returned to normal 48 hours after application, whereas in the case of mustard gas it remained at about the same level.

Discussion of Results.

In considering these results, the fact must not be lost sight of that the hæmobactericidal power before gassing was by no means a constant, and was found to vary in the same animal from day to day in spite of care taken to feed and house the animals properly and to prevent them being subjected to fright, factors known to have an influence on the hæmobactericidal power. Nevertheless, the experiments show that interesting changes take place in the hæmobactericidal power after exposure to mustard gas. The tendency is for the hæmobactericidal power to increase after exposure to the concentrations used either by inhalation, subcutaneous injection, or application to the skin. In the lower concentrations by inhalation, where small implantations are employed, the hæmobactericidal power has a tendency to drop 24–48 hours after exposure, but rises again to or above normal within 72 hours; with larger implantations in the same concentrations this transient drop is very much less marked. Here might be mentioned the fact that upon making graduated implantations of living microbes into the blood, the fewer implanted, the greater the percentage of survivors, and with quite small implantations, a survival of a full 100 per cent. is often recorded. The implantations throughout this research were from moderate to large, and as far as possible uniform before and after exposure to mustard gas. In the highest concentration used for inhalation an increase in the hæmobactericidal power was recorded in all implantations, and where mustard gas was administered by subcutaneous injection and by application to the skin there is an early rise in the hæmobactericidal power in all implantations.

The above findings would appear to be contrary to those anticipated in view of the previous research carried out on the effect of mustard gas on alexin and antibody formation, and incidentally to the well-known fact that mustard gas lesions are so resistant to treatment. What, then, is the explanation of this increased hæmobactericidal power after exposure to mustard gas? The increase in the hæmobactericidal power or natural response to cope with infection or other foreign materials in the body is of a primary and secondary nature; the former makes use of phagocytic action, and where the serum is naturally bactericidal, also of serobactericidal action; the latter makes use of antibacterial elements given out by the leucocytes when these are incited by infection or other means, and it is mainly by this ectocytic chemical action, and only to an insignificant extent by phagocytosis and internal digestion, that the bactericidal action of the leucocytes is exerted.

It is considered that the increased hæmobactericidal power observed can be accounted for by the pathological findings after inhalation, subcutaneous injections, and the application of mustard gas to the skin. In the case of inhalation experiments, in the concentration of 1 in 20,000, it was found histologically that the upper air passages, the greater part of the bronchial tree, in addition to the lungs, were invaded by leucocytes in every stage of disintegration. In the case of subcutaneous injections and application to the skin the same invasion of leucocytes is seen at the sites involved, directly attributable to the intense reaction set up by mustard gas.

As stated above, it is the antibacterial elements given out by the leucocytes which constitute the hæmobactericidal power, and it is conceivable that in the course of their disintegration a considerable pouring out of these elements into the blood takes place. Previous work has shown a fall in alexin after exposure to mustard gas, and as no change of note has been found in the blood count, it is reasonable to assume that the origin of alexin may not be the leucocytes. Although the general consensus of opinion favours the view that the alexin is essential for the formation of bacterial antibodies, the results of these experiments do not bear out this view, inasmuch as the alexin was found to be greatly diminished.

On further consideration it was thought necessary and desirable to exclude certain possible factors which might have influenced the results obtained. 1. It was considered necessary to ascertain whether the hæmobactericidal power could possibly be affected in those cases in which the blood specimens were obtained from animals in a moribund condition.

2. Experiments were carried out with other substances causing tissue destruction to confirm the views expressed as to the cause of the increased hæmobactericidal power.

As regards (1) the following experiments were carried out:—

(*a*) A guinea-pig was given a lethal dose of amyl nitrite, and his hæmobactericidal power *at the point of death* was compared with his normal. There was no change.

(*b*) A guinea-pig was given a lethal dose of nitroglycerine and his hæmobactericidal power *at the point of death* again compared with his normal. No change was noted.

(*c*) A guinea-pig was asphyxiated by mechanical means and again no change was noted in the hæmobactericidal power at the point of death.

The reason why amyl nitrite and nitroglycerine were selected was because in neither case is destruction of tissue brought about, and further, because both these substances produce a fall of blood pressure as is the case with mustard gas.

As regards (2) the following experiments were designed with the purpose of confirming the conclusion arrived at. Those substances known to produce destruction of tissue—namely, hydrochloric acid, liquor epispasticus, and formic acid—were applied to a shaved area of skin of the back of guinea-pigs and a comparison of their hæmobactericidal power at the end of 24, 48, 72 hours, and six days made with their normal.

In the first experiment 75 mg. of hydrochloric acid were applied within two adjacent one-inch gelatin rings. In the second experiment 150 mg. of liquor epispasticus were similarly applied.

In the third experiment 75 mg. of formic acid were applied within a one-inch gelatin ring.

In the fourth experiment 150 mg. of formic acid were applied within two one-inch gelatin rings (75 mg. in each).

The results obtained showed a pronounced increase of the hæmobactericidal power within 24 hours in all cases, most pronounced in the case of the two applications of formic acid which produced the greatest amount of destruction, and only slightly less pronounced in the case of liquor epispasticus which produced least destruction of tissue.

At the end of 48 hours the hæmobactericidal power, though still much increased, showed a slight decline when compared with that present at the end of 24 hours.

At the end of 72 hours the hæmobactericidal power, though higher than normal, showed a further decline.

At the end of six days the hæmobactericidal power in the case of three animals reached its normal level, the fourth animal dying on the fourth day. The death of this animal was caused by damage produced by heart puncture in the course of obtaining blood for examination.

If, now, the blood count be considered, it was found that in every case at the end of 24 hours there was an increase of white blood corpuscles concomitant with the increase in the hæmobactericidal power. This same condition obtained at the end of 48 hours, and pari passu with the decline in the hæmobactericidal power there was a corresponding decline in the number of white cells. At the end of 72 hours there was a slight increase in the white count in the case of three animals, the one treated with hydrochloric acid showing a fall. Six days after the blood count exhibited no special feature and approximated to the normal.

It is not considered that the ½ c.cm. of blood withdrawn daily during the experiment affected the blood count in any way.

Conclusions.

1. After exposure to mustard gas by inhalation, subcutaneous injection and application to the skin, the hæmobactericidal power has been found to increase; the more severe the exposure, the more pronounced this increase.

2. A similar increase in the hæmobactericidal power has been noted after the application of other tissue-destroying substances such as hydrochloric acid, formic acid, and liquor epispasticus.

3. No change in the hæmobactericidal power is noted at the point of death after the injection of substances which do not produce tissue destruction.

4. It is suggested that this increase of the hæmobactericidal power is due to a considerable pouring out of the antibacterial elements from the leucocytes into the blood as the result of their disintegration.

5. No conclusion is possible from a comparison of the results of the experiments carried out in vitro and in vivo for the reasons given.

6. It would appear that there is some common factor at work—namely, the release of antibacterial elements from the leucocytes at the site of damage, influencing the bactericidal power of the blood.

It is of interest to note the results obtained by Colebrook, Eidinow, and Leonard Hill in their work on the effect of radiation on the bactericidal power of the blood in which an increase in the hæmobactericidal power also occurs.

I wish to take this opportunity to express my indebtedness to Dr. L. C. Martin for his constant assistance and suggestions throughout this research and for his help in the compilation of this paper; also to Sick Berth Chief Petty Officer B. Woolcott, my laboratory assistant, who has carried out the practical work and whose skill in the technique involved in these experiments has been of great help and value throughout this research.

GREAT DILATATION OF THE LEFT AURICLE.

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THE following is an account of a case which showed a remarkable degree of dilatation of the left auricle. Such a condition was described by Sir Isambard Owen and Dr. Fenton in 1900.[1] Another case was described in THE LANCET in 1923 by Dr. J. G. Emanuel,[2] and a third in 1924 by Dr. Batty Shaw.[3]

History.

The patient was a woman, aged 38 at the time of her death. She was first admitted to King's College Hospital under Dr. H. W. Wiltshire in 1920. She gave a history of rheumatic fever at the age of 16, and after this had had frequent minor attacks of rheumatism. She had also had pneumonia and pleurisy on the left side when she was 21. She had one child 4 years old and had also had three miscarriages. At that time she complained of pain over the base of the right lung. She was thin, cyanosed, and very dyspnœic.

Physical examination showed pulsation of dilated veins at the root of the neck. The chest was rather more prominent on the left side of the sternum than on the right; the apex beat was in the fifth space outside the left mid-clavicular line. Systolic and diastolic thrills were palpable in the mitral area. Dullness extended an inch to the right of the sternum up to the second left rib, and about an inch outside the left mid-clavicular line. A rumbling diastolic murmur was heard near the apex and there was also a systolic murmur conducted outwards. The pulmonary second sound was loud and reduplicated. The apex rate was about 130 a minute and the rhythm showed the complete irregularity of auricular fibrillation. (Fig. 2.) At the right base the breath sounds were poor and percussion note impaired. Pleural frictions were heard here. The Wassermann was negative, the red cell count and hæmoglobin high. Treated with digitalis she improved greatly and compensation became fairly well established.

A diagnosis of mitral stenosis and regurgitation, adherent pericardium, auricular fibrillation, and pleurisy was made. A skiagram taken at this time is reproduced. (Fig. 3.)

In February, 1922, she was again in hospital with acute bronchitis. Again she recovered pretty well. The physical signs on this occasion were as before. Since being in hospital she had attended as an out-patient from time to time, first under Dr. Wiltshire and latterly under my care. Electrocardiograms taken from time to time have shown auricular fibrillation and well-marked preponderating hypertrophy of the right ventricle. She kept fairly well except for occasional attacks of bronchitis. Pain tended to recur at the base of the right lung, especially on exertion. Examined in November, 1925, the same signs were found at the base of the right lung. The cardiac dullness came about 2 inches to the right of the sternum, up to the second left rib, and out to about 2 inches beyond the left mid-clavicular line. Systolic and diastolic thrills and murmurs were present in the mitral area.

In January, 1926, she was admitted under my care with acute bronchitis, very cyanosed, very breathless. The apex rate was about 80, with hardly appreciable irregularity. The beat was very feeble. Dullness came 3 inches to the right of the sternum and extended out to the anterior axillary line on the left. No thrills were felt and the murmurs were very faint. She suddenly collapsed and died soon after admission. Owing to a breakdown only the first lead of an electrocardiogram was obtained. This showed the P wave to be absent and the S wave very marked. The irregularity was very slight. (Fig. 1.)

FIG. 1.

Electrocardiogram Jan. 9th, 1926. Taken just before death. Lead I. only obtained. Auricular fibrillation and what would probably be right side preponderance present. There is slow rate and only slight irregularity; probably due to some heart-block.

Autopsy.

The body was fairly well nourished. There was slight œdema of the ankles. The mediastinal tissues were œdematous. Both pleural sacs were obliterated by adhesions; those on the left were fairly soft, those on the right more dense. On both sides they were dense over the diaphragm. Rather long band-like adhesions lay between the right upper lobe and the pericardial sac. Both lungs showed brown induration and acute bronchitis and a good deal of œdema. The pericardial sac was adherent to the chest wall fairly tightly for about 4 inches to the left and 3 inches to the right of the mid-line. Both lungs were somewhat pushed aside by the heart. The greatest horizontal diameter of the heart as it lay in the chest was about 10 inches. The pericardial sac was thickened. Its cavity was obliterated everywhere by adhesions. These were fairly fine over the left ventricle and could be separated, but over the right ventricle they were very dense. The right border of the heart seen from the front was formed by the left auricle, which projected well to the right from behind the right auricle. At the back the pericardial sac was adherent to the adjacent structures in the posterior mediastinum. In the area in relation to the back of the left auricle it was densely adherent to the medial part of the right leaf of the diaphragm over an area about 3 inches square. The whole heart weighed 31½ oz.

On the whole, the shape of the heart, excluding the left ventricle, was globular. (Figs. 4 and 5.) The right auricle was much dilated and could hold about half a pint. This, and other measurements hereafter given, were made after fixing in formalin, so no doubt some shrinkage had taken place. The inferior vena cava at the point of its junction with the heart had an internal circumference of 3½ inches. The tricuspid valve was much dilated, and its cusps were a little thickened. The right ventricle was much dilated and

[1] Clinical Society Transactions, 1901, xxxiv., 183.
[2] THE LANCET, 1923, i., 591.
[3] THE LANCET, 1924, ii., 493.

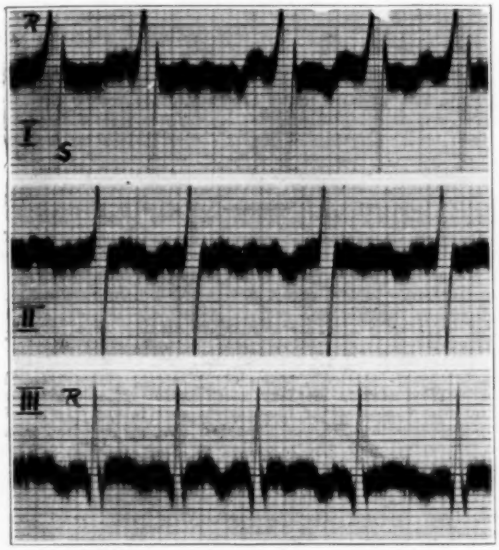
hypertrophied. The pulmonary artery had an internal circumference just above the valves of 3½ inches. The valves were large and competent. There were a few patches of atheroma in the main artery and the two branches. The left ventricle was hypertrophied. The wall near its middle was three-quarters of an inch thick, and tightly contracted. The aorta was small; the whole tube from the beginning throughout the arch only admitted a fairly large finger comfortably. Its internal circumference just above the valves was 2¼ inches. The valves were a little thickened but competent. The aorta was rather narrower at the closed ductus arteriosus than anywhere else; there were two areas of thickened intima here ¼ inch in diameter. The mitral valve showed marked stenosis. Its opening took the form of a slightly crescentic slit, just under an inch long. The flaps were fused and the chordæ tendineæ much thickened. The edges of the hole were so hard one could barely force a finger through.

The left auricle was enormously dilated. Its capacity was about one and a half pints. It was full of p.m. clot. The antero-posterior diameter was about the same as the vertical, the lateral was larger. The appendix was practically absorbed into this great chamber. The wall was everywhere very thin, and no muscle could be seen by the naked eye. The left pulmonary veins entered by three openings situated high up in the wall. The lower two were small. On the right side there were two veins, situated high up in the wall, the upper the larger. This huge left auricle passed to the right behind the right auricle which came to lie in front and on a rather higher plane. It completely filled up the arch of the aorta which passed over it and down behind and a little to the left of it. The dense adhesions between it and the right half of the diaphragm have been mentioned. The foramen ovale was quite closed. The bifurcation of the trachæa was pressed on by the left auricle from below.

As regards the rest of the organs the liver was of the typical "nutmeg" variety, weighing 3 lb. 10½ oz. There was a little free fluid in the peritoneal cavity. The spleen weighed 9 oz. and was firm and fibrous. The left kidney showed an old infarct in the lower pole and a recent one in the upper. There was no antemortem clot in the heart.

Microscopical examination of the heart muscle showed the following changes. The left auricle showed a very thin band of muscle mixed with much fibrous tissue. On the pericardial side there were dense layers of fibrous tissue. In the left ventricle there were patches of fibrous tissue with a certain amount of round cell infiltration. These areas were most marked in the zone of fibrous tissue forming the pericardial adhesions. Similar fibrosis was found in the wall of the right ventricle, and most of all in the wall of the right auricle. Over the right ventricle an active inflammatory process was still at work.

FIG. 2.

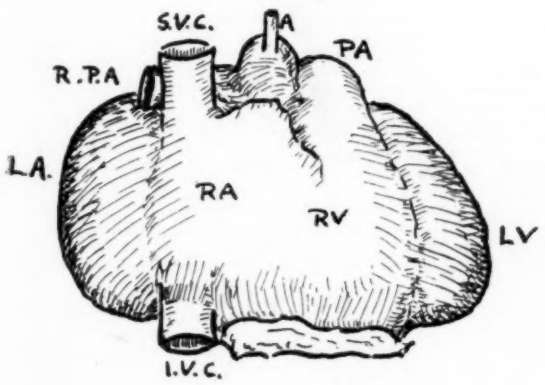


Electrocardiogram August 31st, 1920. Showing auricular fibrillation and right side preponderance. This agreed very well with the relative sizes of the ventricles at autopsy.

FIG. 3.

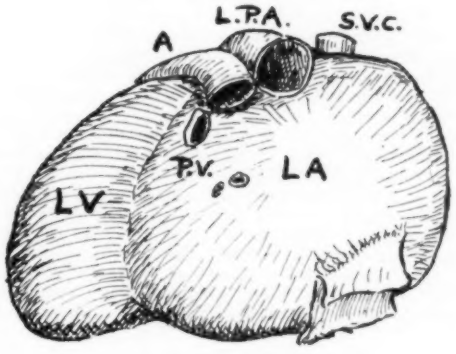
Skiagram taken in 1920.

FIG. 4.



Heart. Anterior view.

FIG. 5.



Heart. Posterior view.

Comments.

The condition of the left auricle was not diagnosed in this case during life. In the three other cases referred to, the enlargement of the auricle in a transverse direction was more extensive than in this. It may cause dullness in the right axilla, and it has been tapped here and blood drawn on the suspicion that it was a pleural effusion. The physical signs of the condition, apart from the dullness to the right of the sternum, were not marked. They are characterised by the transmission of the thrill and murmur found at the apex to the right side of the chest. The clearness of these signs must depend upon the closeness of the contact of the left auricle with the chest wall. In this case the right auricle was the part of the heart in contact with the chest wall furthest to the right. The adhesions in the pleural sac in this case seem to have moored the front border of the right lung and so prevented its displacement in this area to any great degree. The left auricle projected well into the right pleural cavity, and formed the right border of the heart as one looked at it, but there was lung between it and the chest wall. The capacity of the auricle was the same as in Dr. Batty Shaw's case, but less than that of Dr. Emanuel, which was 40 oz. Pericardial adhesions have been present in all the cases described, either universally throughout the sac or locally over the left auricle. Mitral stenosis was present in three only; the other three did not show it, though there was evidently regurgitation. One may take it that the pericarditis in all these cases was accompanied by a severe myocarditis. The microscopical findings in my case give some idea of the widespread damage inflicted on the myocardium. Here and there in this case there were signs that the inflammatory process was still active. Perhaps the left auricle suffers exceptionally, and under the high intra-auricular pressure due to the lesion at the mitral valve gradually dilates to this remarkable size.

In mitral stenosis it is usual to find some degree of dilatation of the left auricle together with some attempt at hypertrophy. The state of the chamber at autopsy must depend on the pressure inside it during life, and the condition of the wall after the carditis which affected it along with the mitral valve and pericardium. The left auricle attains a greater degree of dilatation than any other chamber of the heart for three reasons—because it has thin walls, has no safety-valve into the great veins like the right auricle, and is being filled by both ventricles at once when there is mitral reflux.

When one first considers this great transverse enlargement of the left auricle it seems rather remarkable. In the slighter degrees of enlargement it extends backwards under the bifurcation of the trachæa. It can readily be seen when the patient is screened in the right oblique position as a rounded shadow projecting backwards from the heart shadow into the retro-cardiac space. A little larger and it fills up the space under the arch of the aorta. Cases have been recorded in which it has pressed on and interfered with the function of the left recurrent laryngeal nerve. It may also press on the œsophagus. Very little enlargement takes place to the left. The arch of the aorta passes over the auricle, and then down, behind it, and a little to the left of it. The left ventricle lies in front and to the left of it, and is in all probability enlarged. It cannot, therefore, expand through the arch of the aorta to the left. The spine lies behind it, so it enlarges to the right and rather forwards. The right auricle then comes to lie in front of it and the right lung, if free, is easily displaced. A very great increase in size occurs of that small piece of the wall of the left auricle that lies between the root of the right lung and the inter-auricular septum a little to the front.

The lesser degrees of enlargement can only be detected by X ray examination in one of the oblique positions, preferably the right anterior oblique. probably quite extensive degrees of dilatation occur not infrequently and are not detected because they give no physical signs. If the shadow projects to the right of the heart, as seen in an antero-posterior view, it may escape recognition as being that of the left auricle unless the direction of its enlargement is borne in mind. It does not give its distinctive physical signs until it is right up against the chest wall. There is no doubt that oblique X ray examination is most helpful in cases of obscure cardiac enlargement.

TWO CASES OF NEOPLASMS OF THE MEDIASTINUM

WITH UNUSUAL COMPLICATIONS.

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CASES of neoplasm of the lungs and mediastinum are probably a great deal more common than are generally supposed, but the unusual nature of the complications in the cases described below make their publication justifiable.

The first is a case of a secondary neoplasm of the mediastinum with an aspergillus infection.

A. L., male, aged 55, came complaining of pain in the knees. Was always healthy until 1917, when the right kidney was removed for hæmaturia and found to contain a hypernephroma. He was a master plumber and had never been concerned with the handling of grain or rope, nor had he kept canaries or other birds.

In December, 1921, he noticed that his knees commenced to creak, associated with gradually increasing pain. In April, 1922, he developed a severe dry cough with small repeated hæmoptyses, and had one or two night sweats. During the summer of 1922 he remained fairly well, but the cough and hæmoptysis persisted. His weight fell from 156 lb. (normal) in April to 136 lb. in December, 1922. In October, 1922, he had an attack of pleurisy in the right side.

When first seen on Oct. 25th, 1922, he had a dull earthy complexion, and teeth and tonsils were septic. Chest: antero-posterior diameter increased. Lungs, right: Movement diminished with slight local flattening at apex; percussion note dull second to sixth dorsal spines behind, impaired over the rest of the lung. Breath sounds broncho-vesicular over the upper half of the lung with increase of voice sounds, but air entry diminished, with a patch of bronchial breathing and bronchophony opposite the spine of the scapula. Coarse râles, increased on coughing, were audible over the upper half of the lung. Left: Note hyperresonant; a few coarse râles and prolonged expiration at the apex. Abdomen: An indefinite resistance was felt in the right kidney region. Sputum was repeatedly negative for tubercle bacilli. Wassermann reaction was negative. Radiography showed a large shadow in the posterior mediastinum; the right apex was opaque. The trachea was displaced to the right. A few days after examination he coughed up a body the size and shape of a small almond, followed by a similar piece a little later.

Microscopic section showed that the first consisted of fibrous tissue with a focus at one point from which the mycelium of a fungus was spreading; the second consisted entirely of fungus, the only normal tissue being a layer of striated muscle perforated by the fungus. A culture of the material showed a considerable growth of aspergillus fumigatus. Injection of this into a rabbit caused death from aspergillus pyæmia. Agglutination and complement-fixation tests on the patient for the aspergillus were both negative.

In November, 1922, he was admitted to St. Bartholomew's Hospital under Prof. F. R. Fraser, who has kindly allowed me to use his notes. The temperature and pulse were usually slightly raised. He was treated with large doses of potassium iodide without effect and later with X rays under which his weight increased to 148 lb. and he was generally improved.

He was discharged in January, 1923, and remained fairly well till March when he relapsed, was readmitted and died with signs and symptoms of acute bronchitis.

At post mortem the left pleura was not adherent, the left lung showed patchy broncho-pneumonia, especially at the base, and much emphysema. The right pleura was densely adherent and the lung showed broncho-pneumonia. The mediastinum was occupied by a mass of mottled greyish growth with considerable necrosis from which protruded into the left main bronchus two rounded firm masses. The left kidney was hypertrophied; the right was replaced by a mass of growth the size and shape of the kidney. No other secondary growth discovered. The nasal sinuses were

unfortunately not examined. Section showed: Lungs, acute broncho-pneumonia; mediastinal mass and mass in right kidney showed the structure of a papillary carcinoma of the kidney; suprarenal, no evidence of growth. In none of these organs was there any trace of aspergillus fungus. By a process of exclusion it is nearly certain that the aspergillus coughed up must have come from the nasal sinus.

I am greatly indebted to Dr. L. P. Garrod for the extensive pathological work.

A considerable number of cases of combined aspergillus infection and mediastinal neoplasm have been reported, but I cannot find records of any which have been so completely worked out from the pathological point of view. The disease is very rare in England, the majority of the cases recorded having occurred among the bird fanciers in Paris. The case is also of interest: (1) On account of the length of time, over four years, between the occurrence of the primary and secondary growth, as in this type the secondary growth nearly always occurs within three years of the primary. (2) On account of the markedly beneficial temporary result of X ray therapy; the patient gained 12 lb. in weight and his symptoms were much ameliorated.

The second case is one of a neoplasm of the mediastinum, possibly primary, but probably secondary, associated with tuberculosis of the lung.

J. P., aged 42, labourer, complained of pain in the left side. Malaria 1919, dysentery 1898, otherwise healthy. Since 1920 had abdominal pain after food with flatulence and vomiting, but no hæmatemesis. In October, 1923, he commenced to cough and have acute pain in the left chest. The cough was at first dry, but later he had a profuse greenish expectoration, sometimes blood-stained. He commenced to lose weight, and his appetite began to fail. On examination on Oct. 15th, 1923, he looked ill, and had obviously lost weight; fingers slightly clubbed, teeth septic. He was dyspnœic and slightly hoarse. Lungs, right: Slight hyperresonance, otherwise normal; left, movement much diminished, especially at the base. Air entry practically absent over the middle third, and diminished over the remainder of the lung. Dull to percussion from the second rib in front, and from the spine of the scapula behind. Breath sounds faintly bronchial, a few medium râles scattered throughout the lung. At the extreme base the note was less impaired and the breath sounds were broncho-vesicular. Abdomen: Diffuse tenderness in the upper part. Larynx, arytenoids, and cords slightly inflamed, no ulceration, no paralysis. Radiography showed that the left diaphragm moved slightly less than the right; on the left side the middle third of the lung was obscured by a dense, but not quite uniform shadow, which also occupied the posterior mediastinum. The edges were not discrete, and there was haziness of the remainder of the lung. On the right side there was exaggeration of the normal striation. Sputum at first negative, afterwards repeatedly positive for tubercle bacillus. Wassermann reaction negative. Blood count showed a slight secondary anæmia.

He went rapidly downhill and died at the beginning of December with signs and symptoms of acute bronchitis.

A post-mortem was performed by Dr. W. A. Young, pathologist to the Royal Chest Hospital, to whom I am indebted for the following extracts from his report.

The right pleural cavity was free from adhesions. Left lung was completely adherent to chest wall. When left lung was being stripped the pleura was ruptured and about two pints of thin greenish-yellow pus were evacuated from the lung, which, on section, was found to be a series of ragged, communicating cavities with thick fibrous walls covered with necrotic tissue. The upper lobe was invaded by a dense yellowish growth spreading from the mediastinum. Some separate nodules were found the size of small chestnuts in the upper lobe and some smaller subpleural nodules on the posterior surface of the lower lobe and on the ribs and vertebræ in association with them.

In the necrotic sides of some of the cavities and in the subpleural region a few areas suggesting tubercle formation were noted; but these were indefinite in the presence of so much necrosis and sepsis. The glands in the left hilum were completely infiltrated with growth and continuous with the mediastinal mass. The left bronchus was completely obliterated and occluded. The right bronchus and trachea showed ulceration, fibrinous exudation, and general congestion of their mucosæ. The right lung showed old scarring of the apex, terminal œdema, and no signs of active phthisis. The mediastinal mass appeared to be an agglomeration of malignantly infiltrating glands, surrounding large vessels, but not infiltrating them, the trachea, or the œsophagus. In the bifurcation, in the region of the left bronchus, and to the left of the trachea the greatest amount of growth occurred.

No enlarged glands found in the neck.

Liver extended two fingers-breadth below costal margin; on section it showed passive congestion and cloudy swelling. A small nodule, the size of a small pea, was removed for section.

Stomach.—Much dilated. At the pyloric end were a few adhesions to the gall-bladder and to local peritoneal surfaces. At this place the wall felt thickened, and on opening the stomach an ulcer was found about the size of a five-shilling piece, immediately adjacent to the pylorus on its antero-superior aspect. The margin of the ulcer and the base were moderately thickened.

Section.—Examination of sections of the main tumour mass and various deposits showed the typical structure of a pavement-celled type of endothelioma.

In the *left lung*, along the growing edge of the tumour, small processes of malignant cells could be seen growing into the terminal bronchioles and alveoli, in some cases engulfing and surrounding catarrhal cells. The alveolar walls, which separate these processes, are apparently being slowly absorbed, as they are traced deeper into the tumour. In some sections the tumour is seen to be growing directly into *fibro-caseous tuberculous areas*, with typical tubercle systems with giant cells and the usual granulation tissue and surrounding broncho-pneumonic areas. In these tubercle systems Koch's bacilli were demonstrated adjacent to processes of malignant cells.

In the *thoracic glands* everything from early typical deposits to older degenerated, and in some cases fibrosed, deposits were found. In the liver was a small deposit of the same structure as the mediastinal mass, in association with early miliary tubercle in Glisson's capsule. One small tubercle system was found immediately adjacent to the deposit of growth.

Sections of the ulcer at the pyloric extremity of the stomach show chronic inflammatory fibrosis of the base and margin, fibrous tissue replacing the deep muscle layers. The epithelium at the edge of the ulcer shows simple degenerative changes alternating with inflammatory hyperplasia in the form of epithelial overgrowth and the formation of some solid columns of cells, which are suggestive of early malignancy. The granulation tissue was sparsely cellular in character, with a few areas of round-celled infiltration and the characteristics of tuberculous granulation tissue with increase of endothelioid cells, &c., but no tubercle systems were found. In the fibrous layers in the path of capillaries and lymphatics areas of marked endothelial proliferation were found. In several instances these areas contained cells which were sufficiently metaplastic strongly to suggest early malignancy.

From the pathological standpoint there are two points of marked interest in the case. (1) The association of an intrathoracic tumour growing into the lung with tubercle and the association of secondary deposits and miliary tubercle of the liver. The former has been reported on several occasions previously, but I can find no record of the previous demonstration of the growth actually invading the tuberculous tissue, and the occurrence of the secondary deposits of the growth associated with miliary tubercle of the liver also appears to be unique. (2) The possibility of a gastric origin for the intrathoracic tumour. This is a suggestion only.

Considering the two cases together they form an interesting commentary on the fallacy that may arise if too much stress is laid on the pathological findings. Both cases from the clinical point of view were fairly typical of intrathoracic neoplasms and the radiographic findings were greatly in favour of that, and the condition was confidently diagnosed prior to the reception of sputum reports.

MEMORIAL TO DAME LOUISA ALDRICH-BLAKE.—A committee upon which the London School of Medicine for Women, the Elizabeth Garrett Anderson Hospital, and the Royal Free Hospital are represented, has decided upon the form of memorial to this distinguished surgeon. A travelling scholarship is to be endowed, open to women graduates from all the medical schools in the United Kingdom, and copies of Dame Louisa Aldrich-Blake's portrait by Sir William Orpen are to be hung in the Royal Free Hospital and the Elizabeth Garrett Anderson Hospital, at both of which she was consulting surgeon. Possibly, also, a bust may be erected in some public place.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF SURGERY: SUBSECTION OF PROCTOLOGY.

A MEETING of this Subsection was held on June 9th, the chair being occupied by Mr. G. GREY TURNER, the President, when a discussion on the

Value of the Closed Methods in Resection of the Colon

was opened by Prof. JOHN FRASER (Edinburgh). The operation of closed anastomosis of the colon was, he said, of interest, apart from the technique of the surgery, in that it represented a striving for an ideal. Since Halstead's paper, 32 methods had been described for effecting this anastomosis, a fact which showed that the ideal operation had not yet been reached. In dealing with statistics he did not include closed methods, and, excluding the surgery of the war, the mortality of anastomosis of the small intestine was 4·8 per cent., and in the anastomosis of small to large intestine it was 7·5 per cent. to 8 per cent. In anastomosis of the large intestine, when carried out without any additional procedure, such as Mikulicz's, or a combination of cæcostomy with anastomosis, the mortality was about 25 per cent. When, however, the operation was done in two stages, or when cæcostomy was added, the mortality fell to 12 per cent. There was, he declared, a large element of risk in doing primary suture of the large intestine, and it was of interest to inquire why there should be such a striking divergence between the mortality figures of small intestine anastomosis and those applying to the large intestine. It depended on the bowel wall. Beneath the endothelial layer of the peritoneum was the tunica propria, in which ran some lymphatics and fine blood-vessels, and this tunica possessed great defensive power against infection. If in an intussusception a small rent had passed unnoticed it might become the channel of infection to the gut. In the large intestine the tunica propria was often replaced by fat, and the stouter the individual the greater was this amount of fat. That entered largely into the question of the danger of suturing the large intestine. In the latter, too, the blood-vessels were comparatively scanty, and in the anterior mesenteric area the blood was not plentiful. In subjects of chronic obstruction the area above the seat of obstruction was more toxic than in a condition of health, and this could not be left out of account in assessing the risks. Moreover, the peristalsis in the large intestine was of a very powerful type, and this meant that the line of suture was liable to considerable mechanical strain.

The Edinburgh Technique.

Prof. Fraser's first work in closed anastomosis was done on dogs, whose large intestine was difficult to deal with, it was very thick and resistant, its blood-supply was rather deficient, and, the dog being a meat eater, the intestinal flora was much the same as in man. A V-shaped incision was made in the mesentery, and when the blood-supply had been ligatured, strong clamps were put on and that portion was cut away. Then two needles were threaded with 00 catgut, and the ligature was passed through the eye of the guillotine on each segment of the bowel to remain. The ligature must run as close as possible to the crushing flap, which was important, as it made all the difference between success and failure. The clamps were removed, the ligatures tied, and the guillotines fastened to the closed end of each bowel. Probably the best type of stitch to use was Halstead's buttressing interrupted suture, and that was probably sufficient, but, in order to be on the side of safety, he usually added a thin continuous suture over the surface. Then the ligature was cut and released, the guillotines were slipped out, and there was no fear of infection. When the suture was completed care was taken to finish it carefully over the point at which the guillotine had been removed. It was essential to invaginate with the finger the line of suture so as to open it freely and completely. Prof. Fraser showed a number of slides of the operated areas at various intervals afterwards. Even in 36 hours the serous peritoneum had completed its junction over the periphery, and in 70 days it was almost impossible to see the outline of the junction; 54 animal experiments were done, and no deaths occurred. Before advising the routine use of this operation, he thought it should be more widely employed by those constantly engaged in abdominal work, as it was still comparatively untried. In the human subject he had done it in 14 cases, with one death, but others in Edinburgh had employed it without a death so far. The operation could be done very rapidly—in from 10 to 15 minutes—and in situations where any more specialised method would be very difficult.

The Dublin Technique.

Mr. SETON S. PRINGLE (Dublin) described the closed method he employed, which varied in certain particulars from that of Prof. Fraser. As he progressed he had seen no reason to alter his technique. He was satisfied that it was a quick operation and that the risk of infection was much less than with the ordinary methods. He showed the clamps he used in the operation for crushing the bowel, the bowel being divided through the crushed portion and carbolic acid applied to the portion projecting beyond the forceps. The mesentery was united up to a short distance from the bowel, and when the ligature was tied there was a gutter of folded intestine. The intestine was then turned over and similarly treated on its other aspect, so that there was only a small area where the serous coats of the intestine were not in contact. The forceps were removed, and the small gap remaining was closed by a stitch. He had used the method in 14 cases, with two deaths, the first in a man in very poor general condition, with advanced carcinoma of the descending colon, adherent to the lateral abdominal wall and with a pericolic abscess. The other case who died was of great interest. It was that of a man, aged 68, who had a ring cancer of the pelvic colon. At first he made excellent progress; the wound healed by first intention and the bowels acted regularly. But on the tenth day he had a temperature of 102° F., and two days later it was evident that thrombosis of the left femoral vein had occurred. A blood culture taken on two occasions produced a non-identified member of the coli group. Death was from septicæmia on the thirty-second day. Apart from these two cases the results of the operation had been very pleasing to him, for the patients made a straightforward recovery and there were no signs of intra-abdominal infection, except that one developed a mild infection of the abdominal wall. In no case was there serious obstruction due to the formation of a shelf. By this method the mucous membrane was not seen or exposed, and one could place the sutures closer to the line of section of the intestine than if the gut had been enclosed by an encircling ligature. Twenty-three days after the operation X rays after a barium meal only just enabled the line of resection to be seen. Even when a shelf did form, Halstead had shown that if there was neither trauma nor sepsis the ridge rapidly unfolded. Schumacher recently told the speaker that he still did closed colectomy as a routine.

President's Remarks.

Mr. GREY TURNER said it was very likely there was much in the claims for speed and simplicity in regard to the closed operation, and it might result in an increase of the operability rate, but he questioned whether the case for a diminished mortality because of a lessened risk of sepsis had been made out. The cause of mortality after resection and anastomosis of the large bowel at the present day was not so much

sepsis as some defect in the blood-supply of the part. In the immediate past much of the mortality was due to attempts made by surgeons to carry out resection and anastomosis of the bowel in the presence of a sodden and septic condition. Another cause was the selection of the wrong time for carrying the operation out. The great advancement in the matter of resection had been the preliminary treatment, which usually meant preliminary cæcostomy. In the cases he most regretted the trouble had been due to some defect in the blood-supply, which had been noticed. If he had any doubt on that point now he removed the clamps before commencing to assure himself, as far as he could by inspection, that there was an adequate blood-supply all round. If surgeons were wedded to the closed method, however, that could not be done. With great care as to details in the ordinary methods, he doubted whether sepsis was likely to be a common cause of failure. He agreed that the closed method enabled the anastomosis to be carried out with greater speed, though he doubted whether the saving in that respect would prove to be of any great importance. He would like to see either Prof. Fraser or Mr. Pringle carry out their method of colectomy in a big fat person, scarcely any part of whose peritoneum was visible. He considered catgut the ideal suturing material.

Discussion.

Mr. P. LOCKHART-MUMMERY said he had practised the closed method, but not that described by either of the opening speakers. He still believed that, save in exceptional circumstances, the open method was the better. The exceptions were the cases in which the growth was in a very inaccessible position, when, if the open method were chosen, the manipulations would have to be done in the abdominal cavity. With regard to the objections to the closed method, he did not include among these the formation of a spur, as that seldom occurred in actual practice. And the bringing together of mucous membrane was not important, as it closed in an extraordinary way. In his view the chief objection was that a large piece of bowel was crushed, and he had not satisfied himself that the juice which appeared as a result of the crushing was aseptic. A second objection was that the surgeon relied for hæmostasis on crushed vessels. He thought serious trouble from hæmorrhage was to be expected, as by this method there was no control of bleeding except by the crushing. The operation of crushing for piles was discarded because of secondary hæmorrhage. He preferred the method by which the bowel was simply stitched together. The factor which made for safety in the open operation was the preliminary or temporary cæcostomy, done at the same time. He had done practically all his cases by the open method, with temporary cæcostomy, and out of his last 20 cases so dealt with he had lost only one. The present smaller death-rate was largely due, he thought, to surgeons recognising the necessity of having a safety-valve above the line of union. He used the through-and-through stitch, locked every five stitches, then started the peritoneal stitch at the junction of gut and mesentery, and brought it straight down the gap on the inner side, leaving the gut at the outer side open, as he thought that one cause of trouble was that there might be hæmorrhage between the layers of the mesentery and that damaged the blood-supply. He admitted the advantage of the closed method when the open operation was not available.

Mr. ASLETT BALDWIN said the path of safety lay in doing a preliminary cæcostomy or colostomy, which he carried out through the right rectus. He had always done the open method of suture. He agreed with the President that the great risk was from sloughing of the bowel. It was important to make sure the bowel had got its proper blood-supply before suturing it.

Dr. F. J. MCCANN said he had operated on the colon a number of times for the removal of growths, &c., and he used the open method. He agreed with what the President said as to the manner of application of the sutures. He used one continuous suture, care being taken that the tissues had not been devascularised. He appreciated the great value of preliminary cæcostomy, which he believed to be of enormous influence in reducing mortality.

Mr. E. W. SHEAF (Guildford) said he had carried out Prof. Fraser's method in four cases. One case, a very severe one, died some days later of pneumonia, and at the post-mortem one could see no evidence of trouble in the transverse colon. He was much impressed with the value of the operation. By it one was better able to avoid contamination than by the open method.

Mr. H. O. BUTLER remarked that he had used Prof. Fraser's method in two cases, one of which was a failure probably due to the speaker's defective technique. He brought a specimen in which there was a very definite shelf, which formed after the operation, and only a moderate-sized probe would go through the opening.

Mr. CECIL ROWNTREE expressed his intention of using the closed method in future. Prof. Fraser's seemed to him the more safe of the two, and Mr. Pringle's the quicker. Animal experiments had played an important rôle in establishing this operation, and it was a pity there were not more opportunities taken to do experimentation in this country. Crushing he regarded as an efficient hæmostatic.

Mr. IVOR BACK spoke of a case in which he carried out Prof. Fraser's method for resection of a carcinoma from the descending colon, without cæcostomy. The patient, a woman, passed a normal motion on the third day, but on the ninth day the temperature began to rise and she complained of pain. The temperature lasted two days, and as the abdomen became tumid he concluded there was leakage. He reopened the last inch of the incision and came upon a large abscess, which occupied the pelvis and contained thin fluid, which was obviously *B. coli*-infected. He inserted a tube and she recovered, the temperature coming down to normal. By testing with methylene-blue he found the urinary apparatus was involved, and it seemed clear that the abscess had infected a small part of the base of the bladder and set up a communication. For some days she passed urine both in the ordinary way and through the wound, then the wound closed and she made a complete recovery. He had been much impressed by the greatly increased facility with which the closed operation could be done in comparison with the open, and one was not impeded by the fear of having a contaminated field at the operation. He also agreed that crushing sufficed to produce hæmostasis.

Mr. W. B. GABRIEL referred to a case of carcinoma of the hepatic flexure without obstruction, in which anastomosis was done by Mr. Pringle's method. Cæcostomy was not done, and the convalescence was uneventful, the patient leaving the hospital three weeks after the operation. He suggested that in the absence of obstruction cæcostomy could be dispensed with.

Reply.

Mr. PRINGLE said he could not agree that sepsis was a negligible risk in the case of the open method of operation; there must be some soiling of hands and materials, and this was avoided by doing the closed operation. The possibility of the formation of a shelf must be borne in mind when operating and especially when suturing. Whenever he had his big crushing clamps with him he did the operation as a routine. He had not seen any trouble with metastasis.

Prof. FRASER said he had not abandoned the open method in his practice, but he considered that the closed form of operation had a great field. In the matter of speed of operation the closed method was infinitely to be preferred, as he could do it in five minutes. As to the President's remark that he would like to see the open method attempted on a fat colon,

that was just the kind on which its greater safety was demonstrable. With regard to the possibility of shelf formation, he recognised that, but one layer of sutures would probably be found sufficient. In the human subject he had never seen bleeding after the operation. A shelf would be avoided by omitting cæcostomy.

SECTION OF OTOLOGY.

THE summer meeting of this Section was held on June 4th and 5th, Mr. G. J. JENKINS, the President, occupying the chair.

The PRESIDENT read a paper, supplemented by a cinematograph demonstration, on

Cystic Serous Meningitis.

He said that Bing, Bárány, and others had described cases in which there was an accumulation of subarachnoid fluid in relation to the anterior aspect of the cerebellum. In the two cases now put forward the symptoms and signs spoken of by Bárány could not be demonstrated, but the cases seemed to indicate that some such pathological conditions as those authors described did occur. Both patients had a history of chronic mastoiditis, an inflammatory process in the mastoid region, and of extensive operative treatment. The labyrinth was intact in both patients. Hysteria was very marked in both, but beneath this were indications of an organic lesion. The general debility, hysteria, giddiness, tinnitus, and headache came on gradually, and were long-standing symptoms before Mr. Jenkins saw the patients. They were in a desperate condition, and at first it seemed that nothing could be done for them. He then thought there might be a septic condition in the posterior fossa, behind the chronically inflamed mastoid region. Accordingly he incised the dura between the lateral sinuses and the labyrinth, and he found a considerable depth of subarachnoid space at a part where, usually, the cerebellum was in intimate contact with the dura, and there was a free flow of cerebro-spinal fluid in making the opening into that space. Both patients experienced relief of their symptoms within 24 hours of the operation. His object in reading the paper was to initiate a discussion on the possibility of accumulations occurring in front of the cerebellum.

Mr. LIONEL COLLEDGE spoke of a comparable case which he had seen in a girl aged 19. She had had a radical mastoid operation, but the cavity was soundly healed when he saw her. She also was hysterical, and had in fact been condemned as a hysterical subject. She complained of the same symptoms as did Mr. Jenkins's patients. The labyrinth seemed intact. She had a pronounced pointing error. He trephined through the occipital bone, the cerebellum bulged into the wound, and on displacing it backwards with the spatula there was a gush of cerebro-spinal fluid. The brain at once started pulsating, and the patient had immediate relief of her symptoms.

Mr. SYDNEY SCOTT said this condition might occur more frequently than was supposed, one reason cases might be missed being that the surgeon deliberately avoided puncturing septic cases. He mentioned the case of a man who had middle-ear suppuration for four and a half weeks, with a profuse discharge from the ear. On opening the mastoid Mr. Scott found the dura mater lying bare in the mastoid cavity, and in an almost sloughing condition. On passing in his finger to feel the boundaries of the area exposed between the labyrinth and the sigmoid sinus, his finger passed through into the cerebellar fossa, and there was a rapid flow of clear cerebro-spinal fluid. He thought there must have been an excessive effusion of cerebro-spinal fluid there, just as occurred in the knee-joint or in the pleural sac.

Dr. J. G. FORBES spoke of similar accumulations of cerebro-spinal fluid as a result of post-nasal or cerebro-spinal meningitis, and described a case of the kind.

Mr. F. W. WATKYN-THOMAS described a similar case, this patient also having had a mastoid operation. She had severe headache and giddiness, with a tendency to fall to the operated side, and a past-pointing error on the same side, with some nystagmus. The speaker thought it might be some pre-cerebellar condition, and Mr. Wyllie was about to operate when there occurred a sudden gush of clear fluid from the old operation cavity and a complete relief of the symptoms followed.

An Unrecorded Aqueduct in the Bird's Labyrinth.

Dr. ALBERT A. GRAY (Glasgow) read a paper on an Aqueduct in the Bird's Labyrinth not previously recorded, and its evolutionary significance. He showed that this was a very short tube, of very fine calibre. It was present in the labyrinth of most species of birds. It was a fine canal, which ran through surrounding bone from the ampulla of the posterior canal to the recessus perilymphaticus. It was less frequently found in the more specialised birds, such as the singing varieties, and crows.

Dr. H. HARTRIDGE (Cambridge) read a paper on the

Fundamental Experiments on which the Resonance Theory is Based.

He said the evidence on which the resonance theory of hearing was based was of a very diverse nature. He described, by means of the epidiascope, the ingenious apparatus by which he conducted his investigations on the subject. The question resolved itself into this: Does the ear possess the property of persistence of sound? It must if it contained resonators. And if it did, how could one hear an interruption in a musical tone? He argued that the ear certainly does show persistence of tone, and that the physical evidence he was able to submit fitted in with the physiological. The phenomena which took place in the ear could not occur unless there were in it suspensory discs of some kind, acting as resonators. He purposely did not enter into the question of where in the ear these were situated. He described and commented on the models of Ewald and of Wilkinson, and the deductions those authorities made from them, remarking that models did not behave exactly as did what they were made to represent, and the mere fact that Ewald's model was on a different scale to that of Wilkinson, and that different materials were employed, was sufficient to account for the divergent conclusions arrived at.

The subject was discussed in considerable detail by the PRESIDENT, Mr. SCOTT, Mr. G. WILKINSON, and Dr. GRAY, and Dr. HARTRIDGE replied.

A number of interesting cases were shown and discussed.

During the meeting Messrs. Allen and Hanburys, Messrs. Down Bros., Messrs. Meyer and Phelps, and the British Colloids Co. exhibited their products in the Barnes Hall.

NORTH-WESTERN TUBERCULOSIS SOCIETY.

Tuberculosis of Joints.

A MEETING of this Society was held at the Medical School of the University, Manchester, on June 4th, Dr. A. ADAMS presiding. Sir ROBERT JONES gave an address on this subject.

Tuberculous Joints in Children.—Sir Robert Jones said that tuberculosis of joints was chiefly a disease of children. Eighty per cent. of cases occurred between the ages of 2 and 14 years. When the disease occurred before that age it ran a grave course. The onset of disease corresponded to the activity of epiphyseal growth when the epiphyseal blood-supply was most abundant. It should be clearly emphasised that the disease was not hereditary. Heredity—in its Mendelian sense—dealt with unit characters transmitted through successive generations in accordance with definite laws. It was unthinkable in terms of

heredity that a bacillus—like the tubercle bacillus—could be transferred in this sense, as it would have to be carried in sperm or ovum as a foreign body. If conveyed through the placenta the case would be taken from the hereditary class and placed in the congenital. Congenital transmission dealt with any infection which occurred to the fœtus from the moment of fœtalisation to birth. The cases of congenital tuberculosis were sufficiently rare to be of no practical importance. A tendency to the disease by way of increased susceptibility might be transmitted. Anything which diminished resistance predisposed to infection. Embryonic tissue had been proved by experiment to be very resistant to tuberculous attack. Tissues which could resist small doses of tubercle would succumb to large ones. The only absolute proof of the presence of tubercle in a joint consisted in the identification of the bacillus, inoculation of a guinea-pig, or the histological evidence. Specific tests, such as the von Pirquet, were of more value in their negative than in their positive reaction. Blood tests in spite of the investigations in regard to tuberculous antigens were of no practical value. Joints were attacked mainly by the bovine bacillus. Infection occurred chiefly through inhalation of infected dust finding its way to the blood stream via adenoid tissue, tonsils, and bronchial glands, or through the small intestine. Clinical evidence and experiments on tuberculous animals clearly established the exciting influence of trauma.

Sir Robert Jones discussed at length the significance of symptoms, describing the early and later deformities. The most significant symptom of activity was rigidity, with limitation of movement in all directions. If movement were found to be free in any one or more directions that was evidence that recovery had taken place. Paralysis occurred in association with only slight angulation and might be absent in very pronounced angulation. It might recover with increasing angulation. The paralysis was due to pressure from pachymeningitis, from epidural exudates, or from a collection of fluid debris. Recovery generally occurred in six months, although there might still be recovery from paralysis after many years. Operation was, therefore, rarely needed. In caries of the spine the bodies were affected, and laminectomy would dangerously weaken the spine. In discussing treatment, emphasis was laid on the fact that the disease was a local manifestation of a general infection. The aim of treatment was to improve resistance, protect the joints, and prevent deformity.

Tuberculous Joints in Adults.—Tubercle in the adult, Sir Robert Jones said, was almost a different disease from tuberculosis in the child. It meant a prolonged convalescence—often years in duration—and resulted in a firm fibrous or bony ankylosis. The disease in adults was more prone to general dissemination, and in consequence the speaker recommended early operation to shorten the duration of disease. The aim of operation was to ankylose the joints. The duration of disease in this way was shortened to months rather than extended to years. In children operation was very rarely justifiable, and the days of excisions and erasions must be considered as passed. Patients were to be met with to this day who had flail and shortened limbs as the results of meddlesome surgery.

Abscesses.—As to abscesses, attention was drawn to the fact that they were generally absorbed if left alone, and often became isolated and cut off from the original focus. An intra-articular abscess in this way became extra-articular. Aspiration did not hasten recovery, and this procedure was only needed if the abscess became very large and threatened to burst, or if invasion of micro-organisms suggestive of sepsis was suspected. If the abscess were benign, but threatened to burst under reddened skin, a very minute incision should be made at the thinnest part. Infection was more likely to take place if the incision were made through healthy tissues. Scraping of an abscess cavity and the use of drainage-tubes was emphatically condemned.

Conservative treatment should include fresh air and sunshine and complete rest and fixation of the joint. Deformities were the result of neglect or ignorance. They should be anticipated. Splints should be of a simple type. The hip should be kept extended and slightly abducted, the knee extended, the ankle at right angles, the shoulder abducted, the wrist dorsiflexed, and the elbow at right angles. Hospitals for children, excepting for acute cases, should not be tolerated in crowded cities. Heliotherapy had proved a most useful adjunct to outdoor life, but great care should be taken that in joint lesions no relaxation in regard to mechanical fixation should be allowed. Artificial light was advocated when the sun was not available. The signs of recovery were discussed and the methods of gradual diminution of mechanical fixation. A joint which increased its range of movement had recovered. If the range decreased, restraint was necessary. If an ankylosed joint altered in its angle during use it was essential to prevent movement.

The necessity of prolonged supervision of tuberculosis in a joint was emphasised. Ankylosis was fibrous, and fibrous tissue contracted for years, long after active tuberculous disease was ended. An angular flexion of spine could increase owing to the influence of gravity, and should be supported long after the disappearance of disease. This all meant continuity of treatment and efficient, skilled after-care. In conclusion, Sir Robert Jones demonstrated the use of splints and appliances.

BRIGHTON AND SUSSEX MEDICO-CHIRURGICAL SOCIETY.

AT a meeting of this Society held on June 3rd, Dr. E. RIVAZ HUNT, the President, being in the chair, Mr. M. FITZMAURICE-KELLY read a paper on the

Cure of Hernia.

In reviewing the progress made in the last quarter of a century, Mr. Fitzmaurice-Kelly remarked that the title of his paper represented an ideal to which we were now substantially attaining. One of the chief factors in the causation of recurrences, wound sepsis, was now practically abolished. The saccular theory of Hamilton Russell was discussed. Mr. Fitzmaurice-Kelly believed that though it accounted for many cases, it was not as universally true as its advocates claimed, and that, from the practical point of view, while there were many cases in which the sac was the cause of the hernia, and its removal was sufficient to effect a cure, there were many in which there was damage, either primary or secondary, to the abdominal walls, which called for some measures of plastic repair. Discussing the methods advocated, Mr. Fitzmaurice-Kelly thought that any method which sought to displace muscles by sutures was foredoomed to failure, and that such stitches did more harm than good. For a time, the method of filigree implantation had many advocates, and in many cases of ventral and umbilical hernia it had given good results; in large inguinal hernia the results were less certain, and any recurrence was very difficult to deal with. Further, wound infection was not uncommon and was fatal to success. Transplantation of patches of fibrous tissue was introduced to deal with cases, such as direct inguinal and ventral hernias, in which there was a defect of the abdominal wall to fill. The immediate results were good, but many recurrences were reported owing, it was said, to the absorption of the transplant. But this conclusion was traversed by Gallie, of Toronto, who showed by careful experiments that the union of the transplant to the edge of the defect was the weak spot. To meet this he devised the method of using his fibrous tissue transplants in strips, in the form of

living sutures, thereby fixing them immovably to the margins of the defect to be filled. The application of this method to many varieties of hernia, especially to recurrences, and cases not amenable to other methods of operation, was described, and Mr. Fitzmaurice-Kelly claimed that since its introduction a large number of patients previously regarded as hopeless could now be cured, and that in all cases in which the removal of the sac was insufficient it was the method of choice. Particularly was this the case in old patients with direct hernias, and in this connexion the use of spinal analgesia and the consequent immunity from lung complications was important.

Discussion.

The PRESIDENT asked whether it was necessary for the patient to lie up for a longer period after the living suture operation than after the more usual methods.—Mr. GEOFFREY BATE said he had originally been rather sceptical, but was now a convert to the method. He asked if any trouble was experienced with the wound in the thigh, and thought that many patients might object to such a large incision apart from the hernia wound.—Mr. H. N. FLETCHER mentioned Southey's method of silk implantation, and said that in umbilical hernia he had had very good results with Mayo's method of overlapping the aponeurosis. While the living suture method was probably the best for large ventral hernias, many of the slighter cases could be cured by layer to layer suture. He agreed as to the importance of spinal analgesia in preventing post-operative lung complications.

Mr. Fitzmaurice-Kelly, in reply, said that Gallie's researches showed that vascularisation of the graft was complete in three weeks, and there was no reason in these cases for a prolonged convalescence. He had had no symptoms referable to the thigh incision in any of his cases—in most, it was easy to suture the gap in the fascia, but when three or more lengths had been taken, the gap had been left open without any disability resulting. With regard to Mayo's operation for umbilical hernia, and many other of the older methods, it was certain that good results had been achieved. But all along the line the difference between the best surgery and the second best was represented by a small but constant percentage, and any method which gave a prospect of definite improvement in results should be adopted. Gallie's results in over 100 cases (mostly relapsed or rejected as unsuitable by others) so far showed no relapses, and this was a great advance on the results of any other method in similar cases. While not denying that the filigree method and Southey's method had rendered service, he thought the method of living sutures was sounder in principle and better in practice, and should supersede them.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held on June 2nd, Mr. ALEXANDER MILES, Vice-President, being in the chair.

Dr. W. T. RITCHIE gave a communication on

Paroxysmal Tachycardia,

based on a study of 14 personal cases and of cases recorded in the recent literature on the subject. Of the personal cases, one was auricular, one nodal, eight ventricular, and four of undetermined origin. The general symptomatology and clinical signs having been described, details were given of illustrative cases. The longest paroxysm was one of ventricular origin in a man aged 29, who had been subject to paroxysms for 14 years; a final paroxysm at a rate of 237–240 was terminated by death on the ninth day. The longest paroxysm on record was one of 15 months' duration in a man aged 22. The frequency of paroxysms was most inconstant; they might occur at intervals of seconds, minutes, hours, days, or years. Paroxysms usually ended spontaneously. No method was known whereby paroxysms of nodal or ventricular origin might be arrested. Attempts to arrest auricular paroxysmal tachycardia met with more success, and such measures as deep breathing, holding the breath, drinking of cold water, straining while the glottis is closed, or firm compression of the abdomen succeeded in some cases. All these measures, if successful, probably acted as does ocular compression by reflex vagal stimulation. Dr. Ritchie held that direct compression of the right or left vagus in the neck was the most effective means of arresting auricular paroxysmal tachycardia. In diagnosis, paroxysmal auricular fibrillation could readily be excluded. It was not so easy to exclude auricular flutter. If vagal compression caused transient slowing of the ventricles, and if this effect passed off rapidly after the vagal compression had been relaxed, it was clear that the case was one of auricular flutter. If vagal compression caused the ventricular rate to fall suddenly to normal—e.g., from 160–180 to 80—and the latter rate was maintained after withdrawal of pressure from the vagus, the attack was undoubtedly one of auricular paroxysmal tachycardia. Electrocardiographic examination was, however, the most reliable means of establishing the diagnosis. The prognosis depended on the degree of integrity of the cardiac muscle and valves rather than on the rate and duration of the tachycardia. The risk attending the administration of digitalis and strophanthus appeared to be greatest in paroxysmal tachycardia of ventricular origin. Quinine and quinidine were probably of little therapeutic value in arresting paroxysms.

In the course of the discussion Dr. C. G. LAMBIE suggested the use of pilocarpine for the stimulation of the vagus, the advantage being that with this substance there was no increase of myocardial irritability.

Dr. A. R. GILCHRIST referred to the possibility of digitalis being a definite exciting cause of ventricular tachycardia and the danger of its use.

The Origin of Gall-stones.

Prof. D. P. D. WILKIE stated that in years gone by the constant association of gall-stones and inflammation of the gall-bladder had led to the belief that catarrh was a necessary antecedent to stone formation. Modern study had shown that stones might exist without bacterial cause, and conversely inflammation might exist without stone. In the first type of case the usual stone was of the kind known as the "cholesterin solitaire," a large single stone of radiating structure, but with no lamellation. It was probably due either to an excess of cholesterin in the blood or to a disturbance of the bile acids holding the cholesterin of the bile in colloid solution. Whilst the single cholesterin stone might remain quiescent it was always possible that it might engage in the neck of the gall-bladder, thus giving rise to isolated afebrile attacks of colic. Infection was common in the gall-bladder, and in those organs thickened by chronic infection streptococci appeared with regularity even though the bile were sterile; the infection might come by the portal passages, the blood, or from some outside source, such as dental sepsis. In these cases there was great engorgement and thickening of the walls with symptoms of toxic absorption. The intimate connexion with the head of the pancreas nearly always gave rise to chronic inflammation at that site. Passing on to where stone and infection coexisted, Prof. Wilkie said that the former was probably the forerunner, impaction causing infection to take place followed by a secretion of mucus, which later became muco-pus. This might result in a mucocele of the organ, but more commonly the stone rolled back, re-entered, became mixed with the fragments of epithelium and muco-pus upon which cholesterin and bilirubin-calcium were deposited,

and thus formed the nuclei of multiple stones septic in origin. At the same time a layer of pigment was deposited on the single stone forming the "combination stone." At operation it was always necessary, no matter how many small stones existed, to search for and remove the large causal combination stone. A primary cholecystitis was very apt to lead to calculus formation which might occur early or late by the same septic process; the swelling of the cystic duct shut off the gall-bladder which filled with muco-pus; later when bile re-entered stones were formed. Frequently at operations undertaken on account of symptoms which had led to the diagnosis of gall-stones, neither stone nor sign of inflammation was found. These cases had been classified by John Berg into the two groups of muco-stasis and cholestasis, the former type of gall-bladder being hypertonic, with mucoid contents, the latter being flaccid and filled with tarry bile; in both types stones were liable to form. Westphal had attributed a functional cause to this condition, having proved that vagus stimulation causes spasm preventing the outflow of bile with biliary colic; this he called "hyperkinetic stasis." The reverse, "hypokinetic stasis," often took place in visceroptotic individuals. Here the gall-bladder was thin-walled and lax, often with pouching; this corresponded to the state of affairs produced by sympathetic stimulation. In both these types stones might form later. Biliary symptoms disappeared after the removal of the organ. Considerable light was thrown on the origin of the numerous symptoms of gall-bladder disease by study of the pathology and nerve-supply of the organ; the connexions of the nerve-supply accounted for the girdle pain, diaphragmatic arrest, and gastric flatulence. The great absorptive power of the gall-bladder explained not only its power of recovery, but also the acute systemic toxæmia in an acute attack and the slow poisoning in long-standing cases. Further, this absorptive power shielded the liver from bile pressure where the common duct was blocked; the same power was made use of in radiographic work. Gall-stones might be passed in relatively small numbers, but the gall-bladder could never be cleared, nor could stones be dissolved in vivo. Thus the only treatment was surgical. This should be conservative so far as was permitted by the pathological state.

Mr. HENRY WADE, Dr. FERGUS HEWAT, Dr. KEPPIE PATERSON and others joined in the discussion which in the main centred on the question of operation in cases of gall-bladder trouble, whether it was preferable to operate early or to put the patient on diet and other treatment in the hope of the attack subsiding and the condition remaining quiescent.

Mr. J. W. STRUTHERS demonstrated two specimens of intramesenteric diverticula from the small intestine occurring in cases upon which he had operated. He described the cases and illustrated them by lantern slides. He said that these diverticula might give rise to acute conditions in the abdomen and their presence could easily be missed. They were connected with the intestine by a minute canal which might become obliterated with the formation of a cyst.

ABERDEEN MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held recently, Dr. J. CROMBIE, the President, being in the chair.

Dr. J. CRAIG read a paper on

Acute Rheumatism in Childhood.

He said that the term rheumatism was unfortunate, but that we could now pick out a definite entity, a disease that works by successive recrudescences and reinfections and produces clearly defined clinical pictures. This condition was now called acute rheumatism, and was a general disease that had four chief manifestations: (1) carditis—when the heart is mainly affected; (2) arthritis—when the joints are affected; (3) chorea—when the brain is affected; and (4) subcutaneous nodules—when the subcutaneous tissues are involved. These four chief phenomena, as one might expect in a general infection, often occurred together and in the young. Invasion of the body by this disease was synonymous with invasion of the heart. Many series of statistics could be given to show the seriousness of the problem. In 1925 13·5 per cent. of medical admissions to the Royal Aberdeen Hospital for Sick Children were cases of active rheumatism. Those cases occupied beds for long periods, and the strain on the hospital accommodation was very great. Dr. Craig discussed the ætiology of the disease in detail. It was a disease of childhood, a little more frequent in girls than in boys, and more common in urban districts and in the artisan and labouring classes. The problem of the exciting cause was unsolved, and in his own opinion the real causal organism had not yet been found. The essential pathology of the disease was one of focal nodules disseminated in the fibrous structures of the body. In the heart these nodules were found specially about the central fibrous body. He exhibited anatomical specimens showing this body and its intimate relationship to the valves. The mitral valve was clinically the one most affected, but the aortic valve was found to be more frequently involved than was clinically obvious. Stress was laid on the fact that the substance of the valve was affected—a valvulitis rather than a simple endocarditis. In all the other parts affected the same nodules were to be found. No special type of child was found to be the subject of rheumatism in Aberdeen. The children were often nervous children, but this nervousness might be due to the disease itself. The symptoms were often vague, but the combination of pallor, languor, and wasting was suggestive. The pyrexia, though often present at the onset of the active phase, was not a striking symptom. Dr. Craig dealt with the signs of carditis in some detail, and discussed the significance of an accentuated second pulmonary sound, of the so-called reduplication of the second sound at the apex, and of mitral diastolic murmurs. Acute dilatation of the heart was the typical condition, and in Dr. Craig's opinion pulse-rate charts were far more important than temperature charts. Subcutaneous nodules were found to be not uncommon in Aberdeen; 5 out of 36 cases showed them. All the cases with nodules had marked involvement of the heart, and these nodules must be searched for, as they caused no pain and no symptoms; tonsillitis was common in Dr. Craig's cases, but the rôle of the tonsil in rheumatism was somewhat difficult to define. Finally, the treatment was summarised. All the treatment centred on saving the heart, rest and patience being the most important factors. The length of the period of rest in bed was difficult to state generally, but it should be at least six months. Homes for treating cases during convalescence were required, as accommodation for long periods could not be found in hospitals. The child should be kept at rest so long as the pulse-rate was falling and had not reached normal. So long as a recent mitral diastolic murmur was present the child should be kept in bed. The child should be at rest so long as the physical signs were changing. The child should gain in weight and in colour, and should have a healthy appearance, and when the child was allowed to get up the return to normal life should be gradual. At each progressive stage the effect of graduated exercise on the heart and pulse-rate should be noted. In most cases, in Dr. Craig's opinion, removal of the tonsils and adenoids was necessary, but the removal had little effect on the rheumatism itself. He held that the use of salicylates in treatment had been somewhat overrated.

In a discussion which followed Dr. WILLIAM BROWN, Prof. ASHLEY MACKINTOSH, Prof. R. J. MCKERRON, Dr. J. F. CHRISTIE, Dr. A. G. ANDERSON, and Dr. H. R. SOUPER took part.

GENERAL MEDICAL COUNCIL.

(*Continued from p. 1150.*)

REPORTS OF COMMITTEES AND OTHER BUSINESS.

EXECUTIVE COMMITTEE.

Medical Reciprocity: Provinces of Saskatchewan and New Brunswick.

Saskatchewan.—At the meeting of the Executive Committee in February last it was resolved to ask the Privy Council to take steps to rescind an order in Council which established medical reciprocity between Great Britain and the Province of Saskatchewan. A subsequent correspondence between the College of Physicians and Surgeons of Saskatchewan and the Registrar of the General Medical Council was read, but the position remains unaltered. The offer on the part of Saskatchewan to accept British practitioners registered in Great Britain if similar acceptance was granted to the diplomates of the Saskatchewan College was pointed out to be inequitable, because it would mean that, whereas a person registered in Saskatchewan and in the United Kingdom could practise, for instance, in Australia or in Italy, an Australian or an Italian, registered in the United Kingdom, could not practise in Saskatchewan. It was indicated that a reciprocal arrangement with the Dominion Council might get over the difficulty, but the Registrar of the Saskatchewan College wrote that the constitution and duties of the Dominion Council would not make this possible, while it could not be admitted that the General Medical Council should have any jurisdiction in the matter of arranging reciprocity between Saskatchewan and foreign countries.

New Brunswick.—A communication was made also to the Privy Council to point out that a decision communicated from New Brunswick on the matter of reciprocity represents the final conclusion of the Provincial Council, and that reciprocity has therefore ceased.

Indian Universities.

Colonel Needham made an oral report in regard to the present position of medical education in India, when the Committee resolved in the cases of the Universities of Bombay, Lucknow, and Punjab as follows:—

"That the recognition of the degrees of M.B., B.S. granted until June, 1926, be continued until June, 1927, on the same conditions as before—viz., the receipt of a satisfactory report from an official inspector approved by the Council, stating that all the regulations of the Council are being fulfilled; and subject to the further condition that a statement be forwarded to the Council signed by the Dean of the Faculty of Medicine, containing a nominal roll of the medical graduates of the year, and a certificate also signed by him to the effect that each of them had fulfilled the regulations of the Council."

Communications were received from the Government of Bihar and Orissa forwarding an application from Patna University for the recognition of its degrees of M.B. and B.S. and enclosing the regulations of the University. These were referred to the Education Committee.

Burma Medical Council and Medical "Cults."

The Registrar of the Burma Medical Council desired guidance as to the recognition of the ethics of adding to the initials of medical degrees or diplomas letters signifying practice in homœopathy, osteopathy, chiropathy, psychotherapy, electrotherapy, and other "cults." It was pointed out that unregistered practitioners of "cults" have no legal status in this country, though there is nothing to prevent any registered practitioner from pursuing any theory of medicine in which he honestly believes, and nothing to inhibit a registered practitioner from consulting with any other person whose name appears on the Register, merely because the latter has adopted a special theory of medicine or surgery, such as homœopathy or osteopathy. As the additional letters were to be used on door-plates or otherwise in pursuit of publicity a note of warning was added.

The Indian Medical Council.

A copy of a Bill which has been introduced into the Indian Legislative Assembly and Council of State to "regulate medical education in India" was received.

Dental Education and Examination.

A report was received through Sir James Hodsdon, chairman of the Committee of Dental Education and Examination, on the observations of the statutory bodies concerned in regard to a previous report on the inspection of the qualifying examinations in dentistry and dental surgery. At the May session, 1925, a report on this subject from the Dental Education and Examination Committee was approved by the Council, who recommended that copies should be forwarded to the licensing bodies, together with the following resolutions, of the Council on Dental Examinations, when the bodies were asked for observations:—

1. That every subject included in the curriculum should form the subject of a written and oral or practical examination.

2. That two examiners should always participate in the oral or practical examinations of a candidate.

3. That whatever may be the system of marking, the percentage for a pass in each subject should not be less than 50 per cent.

4. That it is desirable that, where possible, the practical operative examination in clinical subjects should be conducted on the living subject, and should include dental prosthetics and orthodontia.

5. That it is desirable that, where possible, candidates should be tested in the administration of general anæsthetics in common use in dental practice, and should be required to perform extractions.

6. That the dental subjects of the Final Examination should be passed at one time.

7. That in the regulations for the several examinations it should be provided that examiners in assessing marks should be empowered to take into account the duly attested records of work done by the candidate throughout his course of study in the subjects of examination.

8. That a candidate remitted in any subject of a professional examination should before he is readmitted to examination therein be required to produce satisfactory evidence that he has, during the interval of remission, pursued, at a recognised medical school or dental hospital, the study of the subject in which he was rejected.

9. The candidates who obtain less than 30 per cent. of the marks in any subject should be remitted for a longer period than three months for further study in that subject.

At the November session, 1925, these observations were submitted and the following may be noted.

With regard to resolution 1—

At the University of Liverpool a paper in medicine is now included in the Final Examination for the Licence. At the Universities of Birmingham and Bristol and the Royal College of Surgeons of England courses of instruction in medicine are compulsory, but medicine is not a separate subject of examination in the Final Examination for the Licence.

With regard to resolution 5—

The University of Birmingham has adopted a recommendation "that candidates at the Final Examination for the Licence in Dental Surgery should be expected to administer nitrous oxide gas under the supervision of a qualified medical man, and to perform extractions under nitrous oxide gas or any other general anæsthetic."

The University of Dublin agrees with the remarks of the Royal College of Surgeons of England regarding the suggestion that candidates under examination should be called upon to administer anæsthetics to patients.

The Royal College of Surgeons of England states that "It is the practice of the examiners to ask questions relating to the administration of anæsthetics, of those candidates who are called upon to perform extractions under anæsthetics, and in the opinion of the Board it is not desirable to extend this part of the examination."

The University of Liverpool "does not approve of the suggestion that candidates under examination should be required to administer anæsthetics or to perform extractions for patients."

The Victoria University of Manchester considers the suggestions contained in the resolution (5) "to be neither practicable nor desirable."

At the National University of Ireland, Dublin, "students are not required themselves to administer *general* anæsthetics at the examination."

With regard to resolution 6—

The Victoria University of Manchester now requires that the dental subjects of the Final Examination be passed at one time.

From the replies received it appeared that the resolutions of the Council on dental examinations were enforced in the majority of cases.

FINANCE COMMITTEE.

The report of the Finance Committee was presented by Sir Holburt Waring, the Chairman. The report showed that the income of the General and Branch Councils for the year ending Dec. 31st, 1925, was £18,114 15*s.* 9*d.* The expenditure during the year was £12,189 3*s.* 5*d.* Consequently there was a surplus of £5925 12*s.* 4*d.* The income was £427 less than in 1924, partly due to a reduction of £235 in the amount received for colonial and foreign registration fees, a source of income likely to be smaller in the future, and partly to an income-tax charge which is under consideration. The receipts of the branches for registration fees show an increase in England of £437; a decrease in Scotland of £1040; and in Ireland of £50. The total number of registrations was 2569 as against 2796. The maximum has, therefore, obviously been reached, and a considerable reduction may be looked for in the current year, and for some years to come.

The expenditure of the Council shows an increase of £1315, almost the whole of which is due to the fact that both sessions were prolonged, and they extended together over 13 days as against an average for the past five years of nine days. Besides this, the General Council had to break up over Whitsuntide, 1925, and reassemble, with the result that the fees of the Council show an increase of £720; printing of programmes, &c., an increase of £145; law expenses an increase of £244; and miscellaneous expenses an increase of £152. Against this increase there was a saving of £121 in fees paid to the Executive Committee, as there was no meeting in July. Salaries show a reduction of £65 owing to changes in the staff, and house expenses of £64, due to a reduction in gas, electric light, &c.

The assets are increased by the surplus obtained by each of the branches—viz., England, £3969; Scotland, £1816; and Ireland, £612. The surplus of £5925 is £1258 less than in 1924. It is expected that the income of the General Council and branches will exceed the expenditure during the current year, but it is not likely that there will be a large surplus.

The question of certain liabilities of the Council under schedules A and D has been listed for hearing by the Special Commissioners in July.

PHARMACOPŒIA COMMITTEE.

The report of this Committee was submitted by Sir Donald MacAlister, the Chairman. The number of copies of the British Pharmacopœia, 1914, which was sold by the publishers between Nov. 23rd, 1925, and May 28th, 1926, was 1036 copies. The number sold in the year ending May 28th, 1926, was 2384. This number is again greater than that for the preceding year. The total number sold since the date of publication was 51,391. The stock remaining in the publishers' hands is 2634 copies.

The conference sanctioned by the Council on Nov. 30th, 1925, was duly held on Feb. 23rd, 1926. There were present 23 delegates from the following medical, pharmaceutical, and scientific societies and bodies—namely: The Ministry of Health, the Royal Society, the Royal Society of Medicine, the Medical Research Council, the British Medical Association, the Physiological Society, the Chemical Society, the Linnean Society, the Pharmaceutical Society of Great Britain, the Pharmaceutical Society of Ireland, the Pharmaceutical Society of Northern Ireland, the Society of Public Analysts. Opinions and criticisms were freely expressed on a number of points both of principle and of detail, and large questions were raised, such as the general organisation of expert committees of reference, the delegation of the Council's statutory powers and duties, the adaptation of the Pharmacopœia to Indian and Dominion requirements, and its relation to international and other agreements, and to therapeutic and pharmaceutical research. On March 19th the Pharmacopœia Committee held a special meeting to consider the questions raised at the conference, and others bearing on the subject of the preparation of the next Pharmacopœia, and came to the conclusion that for the full elucidation of these questions it was expedient that an authoritative inquiry should be held, at which evidence of various kinds should be invited, and information not now in the possession of the Committee should be obtained.

The Committee accordingly recommend in their report:—

"That the General Medical Council request the Lord President of the Privy Council to take steps for the appointment of a suitable committee, including members of the Council, empowered to make inquiries, to collect information, to receive evidence, and to make recommendations on the question whether it is desirable to make any, and if so what, alterations in the existing law or practice relating to the preparation or publication of the British Pharmacopœia and to its adaptation to the requirements of the British Empire."

EDUCATION COMMITTEE.

DR. J. Y. MACKAY, the Chairman, placed the report of this Committee before the Council. He said that it was long and required careful study. It consisted mainly of the replies of the various licensing bodies to the inquiries circulated by the Committee concerning the steps which each body had taken to readjust its medical curriculum in accordance with the resolutions of the Council which came into force on Jan. 1st, 1923, and the Committee recommended that it should be circulated to all these bodies for their mutual information.

DR. H. B. BRACKENBURY, a member of the Committee, said that the matter was important, as many public authorities who carried out health services had complained that they could not find a number of sufficiently skilled private practitioners to assist them, especially in orthopædic work, in the treatment of diseases of the eye, and in certain aspects of children's diseases. Education authorities were establishing an increasing number of orthopædic clinics for their children and it often happened that one complained that no private practitioner in its neighbourhood was capable of doing the work. If the Council, however, could say that the medical profession could supply a sufficient number of these practitioners it would not be necessary for local authorities to employ unqualified persons. There were two difficulties: the first was that since the new curricula had only come into force on Jan. 1st, 1923, they had not yet had time to produce a practical effect on the body of the profession. The other was that the Education Committee had no power to inspect courses of instruction but only to visit at the time of the final examination and to see that proper questions were put. The public demand for practitioners trained in these branches of medicine was very urgent and there must be no loss of time in meeting it, and although these matters might be trivial compared to some of the other work of the Council they were nevertheless important. The Committee therefore relied on circulating their report to all licensing bodies to make those who fell short of the required standards realise their deficiencies. The Council should also see what arrangements they could make to supervise training, as no time should be lost in making known to public authorities that students were actually being taught the curricula that the Council had laid down.

DR. H. H. LITTLEJOHN, another member of the Committee, desired to dissociate himself entirely from the views of the previous speaker. He said that licensing bodies were loyally carrying out the resolutions of 1922.

The President remarked that since many teaching bodies had anticipated these requirements of the General Medical Council a large number of sufficiently skilled practitioners was already available.

Sir W. L. Mackenzie said that in Scotland the Scottish Board of Health, which was the central authority with control over medical examination and inspection of school-children, of child welfare, of everything pertaining to tuberculosis, venereal disease, and the general public health, had never had any difficulty in the last 25 years in getting the class of young men and women that they wanted.

Dr. Brackenbury explained that although some authorities alleged that they could not find sufficiently skilled people he did not think that their allegations were well founded, but the Council should take care that they never became well founded.

Dr. Littlejohn agreed with Dr. Brackenbury's views as amended.

The Council resolved to accept the report unanimously and to circulate it to the licensing bodies.

EXAMINATION COMMITTEE.

Sir Norman Walker, the Chairman of the Committee, submitted his report. Referring to the charts of passes all over the country he noted that the post-war crest had been passed in Scotland and Ireland, the returns in 1925 showing an abrupt drop. In England, however, the number (1246) was the highest ever reached, and he expected the drop to come this year. All the examinations in anatomy and physiology except that of the University of Wales have been visited. The results of the visitation had shown, said the report, that the Council might be satisfied that students were being properly examined. Licensing bodies differed slightly in their methods of examination in anatomy and physiology, but all satisfied the Council's requirements that these two subjects should be studied together and thoroughly understood together. The Committee, when visiting licensing bodies, had everywhere been received with the warmest cordiality, an eloquent answer to those who had predicted that the bodies would resent their interference. Everyone had been most anxious to show them everything that they could possibly wish to see.

The report of the Examination Committee was adopted, together with the following two recommendations:—

1. That the previous recommendation of the Committee adopted by the Council on June 2nd, 1920—viz.: That the licensing bodies which have not hitherto supplied in their annual return information as to whether they do or do not examine in operative surgery, ophthalmology, and mental disease be asked to do so in future—having served its purpose be discontinued.
2. That the Examination Committee be authorised to arrange for the visitation of the examinations in pathology and materia medica and pharmacology.

PUBLIC HEALTH COMMITTEE.

Sir John Moore, the Chairman of the Committee, presented his report, which was adopted. He noted that the number of entrants for both parts of the examination had dropped from 465 and 456 in 1924 to 268 and 234 in 1925, by reason of the more rigid conditions which had come into force on Jan. 1st, 1924. It was gratifying that only five applications for exemption had been reported in 1925.

DENTAL EDUCATION AND EXAMINATION COMMITTEE.

The report of this Committee was submitted by the Chairman, Sir James Hodsdon, and contained the observations of the licensing bodies in regard to a previous report of the Committee on the inspection of the qualifying examinations in dentistry and dental surgery. This report, together with certain resolutions of the Council on dental examinations, had been circulated to the bodies whose replies formed an appendix, giving a general view of the position of education along the special lines.

Reviews and Notices of Books.

MUSCULAR ACTIVITY.

By ARCHIBALD VIVIAN HILL, M.A., Sc.D., F.R.S., Professor of Physiology, University College, London. Baltimore: Williams and Wilkins Company; London: Baillière, Tindall and Cox. 1926. Pp. 115. 12*s.* 6*d.*

THE brilliance of any piece of research is displayed not only in the intensity and penetration of the light which it sheds into poorly illuminated zones, but in the continuity of ideas pervading it and the rigidity of the experimental proof supplied. The fascinating logbook which Prof. A. V. Hill has given us as the result of his cruise through seas for the most part unexplored and uncharted, has all these qualities in high degree. It consists of a course of lectures delivered by him in Baltimore in 1924, being the sixteenth course of Herter lectures. The first lecture deals with the dynamics of muscular activity. Here we learn that isolated muscle cannot be regarded simply as an elastic system, since the external work done when the muscle is allowed to contract against an inertia lever depends on the speed of shortening. Human muscle presents the same phenomenon, there being an optimum speed of shortening for each group of muscles, "a speed which everyday experience and common sense have led us to adopt in our ordinary working life." The system is, therefore, a visco-elastic one, and some of the visco-elastic properties of stimulated muscle have actually been reproduced by means of a simple model. One interesting and fundamental fact, which has been demonstrated on frog's isolated muscle, is that the tension of a stimulated muscle, when allowed suddenly to shorten, falls to zero and then reappears along a time course similar to that of the original development of tension. The fact that the degree of fall varies directly with the speed of shortening pointed to the subsequent redevelopment of tension, and hence presumably the original development of tension, as being determined by the visco-elastic properties of muscle. The true mechanical response is, therefore, probably much more rapid than the hysteresis curve to which we usually apply that term.

In the second lecture an account is given of the heat production of muscle under anaerobic and aerobic conditions. The delicacy of the recording apparatus, and the accuracy with which records of the time course of the heat production may be analysed, give us the only index at present available of the intermediate steps in that mechanism which is externally manifested in contraction and relaxation. These thermodynamic results, as Prof. Hill says elsewhere, provide a sketch only of the sequence of events; the completion of the drawing will rest with the chemists. Early experiments showed that the recovery heat production—i.e., the heat produced during the oxidative removal of some of the lactic acid formed in the initial stages of contraction, maintenance, and relaxation—was approximately equivalent to the initial heat; and since the oxidative removal of a given quantity of lactic acid would produce seven times the amount of heat that its production involved, it was clear that only a fraction of the lactic acid produced could disappear in this way. This fundamental conclusion, reached purely from myothermic experiments, has since been amply confirmed by Meyerhof's chemical analyses. Furthermore, the initial heat is absolutely independent of the presence or absence of oxygen. The lecture closes with a general account of the work of W. O. Fenn, one of Prof. Hill's distinguished pupils. We learn here that even an isolated muscle can, so to speak, feel the amount of work to be done required of it, and that the excess liberation of energy when a muscle is lifting a weight, over and above that liberated by an isometric contraction at the same initial length, is approximately equivalent to the external work done, "a fact which is very difficult to reconcile with the simple elastic body theory."

In the third lecture an account is given of the chemical changes accompanying muscular activity both in the absence and in the presence of oxygen. In the former case no changes other than the accumulation of lactic acid and its neutralisation have been discovered, and the absolute, and one might almost say uncanny, agreement between the observed heat of formation of sodium lactate from glycogen and base, and the heat formed when the same amount of lactate appears in muscle, is brought forward as an almost certain argument that other chemical changes are non-existent. The lecture proceeds with a description of the chemical changes occurring in aerobic contraction, and again the myothermic measurements are found to tally exactly with the energy exchange of the chemical events occurring under these conditions. A fascinating picture is drawn of the release of energy during short and prolonged stimuli, a picture which explains how the heat production of a single twitch is greater at a low than at a high temperature, whilst in a prolonged contraction the temperature coefficient of the energy liberation is positive. A fascinating calculation which shows that the surface tension theory of contraction cannot explain the large tension developed by the comparatively small amounts of lactic acid produced, brings the third lecture to a close.

In the fourth lecture we are given an account of the recovery process after muscular exercise in man. The facts discovered as a result of experiments on frog's isolated muscle are found to apply unreservedly to the case of man. We see how enormous may be the amount of lactic acid accumulated before exhaustion is complete, how the excess CO_2 liberated during and immediately following severe exercise is a measure of the lactic acid produced, and how the ratio of this to the oxygen used in recovery is a measure of the efficiency of removal of lactic acid, and therefore of the degree to which severe exercise may be sustained. The respiratory quotient of the excess metabolism of muscular exercise is found to be unity, just as in the case of frog's muscle. A striking calculation of the circulation rate from the oxygen intake during severe muscular exercise gives a figure as large as 8½ gallons of blood per minute! And in order to perform this amount of work the heart would probably require 300 c.cm. oxygen per minute. From calculations such as these Prof. Hill suggests that "a deciding factor in the capacity of a man for severe prolonged exercise may often be the efficiency of his coronary circulation." The general medical public may not have had a very clear conception of the fundamental facts about muscular activity which Prof. Hill and his colleagues have demonstrated. The complete outline of the subject has been lucidly condensed into this volume, with many helpful analogies, and all are now in a position to appreciate the real knowledge that has been gained.

ANATOMY.

Anatomie Medico-Chirurgicale. By PHILIPPE BELLOCQ. Fasc. I., Le Crâne. Paris: Masson et Cie. 1925. Pp. 92. Fr.18.

Dr. Bellocq's treatise has the freshness of outlook and vitality of description usually to be found in the works of French anatomists. The book, which is apparently a series of lectures collated by Dr. A. Weiss and arranged by the author, bears the impress of its origin in the plan of treatment and in other ways. This volume deals with the head, excluding the central nervous system, and contains all the information anyone is likely to want on the structures found in this region. It is not a work on applied anatomy, but rather comes under the indefinite heading "medico-surgical" given to it on the title-page; it is difficult to draw a distinction between this and ordinary descriptive anatomy, unless the personal predilections of individuals are taken as standards of judgment; for surely a few references here and there to the bearing of certain facts on clinical matters do not afford sufficient ground for such a distinction. However this may be, Dr. Bellocq has produced a readable and interesting book, and we can look forward with pleasurable anticipation to the further issues of the series.

Étude Anatomique des Artères de la Peau chez l'Homme. By Mdme. PHILIPPE BELLOCQ. Paris: Masson et Cie. 1925. Pp. 63. Fr.12.

THIS is a summary of the results of radiographic observations on the cutaneous arterial supply. The subject is one which is only known from a general point of view, and a work such as this will find a place in anatomical records, and doubtless also in clinical regard. Madame Bellocq has shown how the arterial supply to various parts of the surface varies with age, and under certain mechanical conditions, and has classified the types which she has found and described. This little book is well worth reading.

The Vertebrate Skeleton from the Developmental Standpoint. By J. S. KINGSLEY, Emeritus Professor of Zoology in the University of Illinois. London: John Murray. 1926. Pp. 337. 21*s*.

AN excellent and authoritative account of the skeleton throughout the vertebrate phylum. The author bases his descriptions on the sound foundation of embryology, for, as he says, "only by ontogeny can homologies (or their lack) be ascertained in the various groups." Developmental details form but a broken path at present in this as in other walks of biological activities, but this does not lessen the truth of the view that they will ultimately make the only road of value, so far as can be foreseen at the moment. Prof. Kingsley has written a book which will be a work of reference on the subject for years to come. It is well produced, excellently illustrated, and provided with a comprehensive and useful bibliography which, while quite up to date, is not intended to be exhaustive.

APHASIA.

By S. A. KINNIER WILSON, M.D., B.Sc., F.R.C.P., Physician for Out-patients, National Hospital, Queen-square; Junior Neurologist, King's College Hospital. Psyche Miniatures Medical Series. London: Kegan Paul, Trench, Trübner and Co. 1926. Pp. 108. 2*s*. 6*d*.

Dr. Kinnier Wilson has written for the "Psyche Miniatures" Medical Series a booklet on the difficult subject of aphasia. In so short an essay it is, of course, impossible to treat this subject fully, but he has contrived to touch on many of its aspects and to present a succinct and lucid account of its manifestations and pathology. The introduction, which is really one of the most important chapters, deals chiefly with the nature of speech and its relation to thought; in it the author insists that the anatomical and physiological aspects of the study of speech and its disorders must not be separated from the psychological. "The function of speech is an intellectual function; the neural arrangements underlying its activity constitute a physiological mechanism; and the component parts of the latter have an anatomical localisation or site." These are the texts on which the subsequent chapters are developed. In the section on anatomical considerations, it is merely stated that "lesions within a more or less well-defined cortical region, extending from the posterior part of the lower frontal lobe, by the island of Reil, to the temporal and lower parieto-occipital areas, are likely to reveal themselves clinically by aphasia in one or other form;" the author, moreover, "regards it as amply proven that lesions towards the anterior part of the speech region are followed by aphasic symptoms in which defect of expression predominates and those towards the posterior part by aphasic symptoms in which the defect of reception is pronounced;" yet it is apparent that Dr. Wilson is prepared to go further in assigning subdivisions

of the speech function to smaller areas. The next chapter considers the acquisition of speech by the child and the relation of the various simpler functions which go to make up the complex ability to understand written or spoken words and to recall words for use in spontaneous speech. The reader will regret that the need for brevity has restricted the space allotted to psychological considerations; the differences of intellectual and emotional and even "automatic" speech are mentioned and some emphasis laid on the frequent loss in aphasic patients of the feeling for grammar or syntax, but the chapter leaves us greedy for more detailed study by one who has obviously much more to say. The essay concludes with observations on some clinical types of aphasia and a note on treatment.

The booklet is excellent and we hope that the author will one day be moved to give us his views at greater length.

BEHAVIORISM.

By JOHN B. WATSON, formerly Professor of Psychology and Director of the Psychological Laboratory, Johns Hopkins University. London: Kegan Paul. 1925. Pp. 251. 12*s.* 6*d.*

THE fact that psychology deals with mental processes incapable of objective study places it, in the opinion of some people, outside the domain of science. The attempt is, therefore, often made to define these processes in physiological terms, but the results are unsatisfying both to the physiologist and the psychologist. Behaviourists boldly eliminate the difficulty by denying any usefulness or validity to such ideas as consciousness, memory, or instinct, and Mr. Watson builds up his theories of behaviour without resort to these conceptions. We must admit his possession of a bold and original mind, even though, unversed in behaviourist nomenclature, we cannot formulate the admission without introducing one of the concepts the writer has eliminated. Starting upon the physiological basis of unlearned activities and simple responses, he accounts for complex behaviour as a growth or development of these mechanisms. Memory, for example, becomes a repetition of manual or verbal habits, but thinking, "on account of the concealed nature of the musculature with which it is done, has always been inaccessible to unaided observation and to direct experimentation" (p. 191). Thus we are able to understand the author's meaning when he says, concerning habit formation: "I have had my own laryngeal processes stimulated to work upon the problem from another angle" (p. 166). Yet he sometimes gives way under the strain of maintaining behaviouristic terminology, and on p. 226 speaks in frankly subjective language of the happiness and contentment of the worker, though with a parenthetic explanation that he uses the terms as they are popularly used.

The behaviourist theory is an ingenious and fairly consistent attempt to circumvent the problem of the relationship of mind and body. Mr. Watson's presentation of it is to be accepted as a method of approach to psychology which is finding some amount of support in America.

ANTHROPOLOGY.

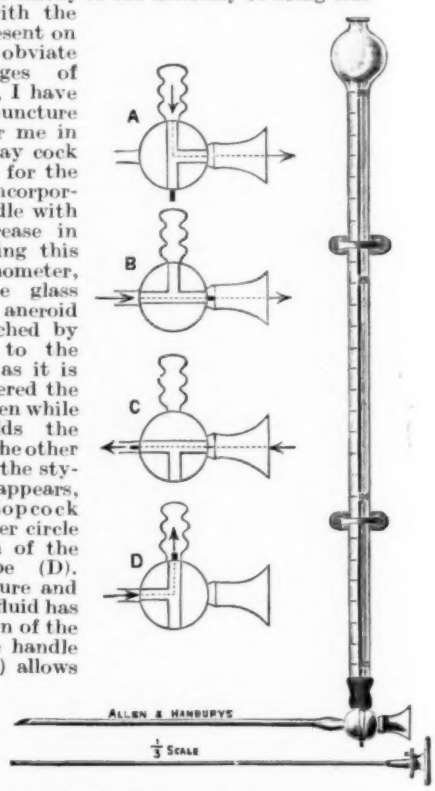
Les Races et les Peuples de la Terre. Second edition. By J. DENIKER. Paris: Masson et Cie. 1926. With 340 text figures and two plates. Pp. 750. Fr.75.

IT is doubtful whether the experts would consider this a sound summary of the present state of ethnographical knowledge, but for the ordinary reader it contains in a short space and with abundant illustrations an interesting collection of facts regarding the structure, manners, customs, and mode of life of men throughout the world. The correlation and interpretation of these data are notoriously ambiguous, and at the moment their historical and psychological significance are matters of active reconstruction and controversy with which the author does not concern himself at length. The first half deals in a general way with anatomy, houses and implements, psychology, social organisation, and so forth. The second half gives a systematic survey of the various races, and this should be useful as a dictionary in which to turn up any odd tribe which one may need to know more about. The footnotes give many references to the literature.

New Inventions.

A MANOMETRIC LUMBAR PUNCTURE NEEDLE.

THAT the pressure of the cerebro-spinal fluid is not measured in this country as often as it should be appears to be due chiefly to the difficulty of doing this single-handed with the apparatus at present on the market. To obviate the disadvantages of these apparatus, I have had a lumbar puncture needle made for me in which a three-way cock and a side tube for the manometer are incorporated in the handle with very little increase in weight. In using this needle the manometer, whether of the glass tube or the aneroid variety, is attached by rubber tubing to the needle as soon as it is felt to have entered the spinal canal. Then while one hand holds the needle in place, the other simply removes the stylet and, if fluid appears, turns the stopcock through a quarter circle in the direction of the manometer tube (D). When the pressure and pulsation of the fluid has been noted, a turn of the tap towards the handle of the needle (B) allows the fluid to run out of the manometer into the collecting tube and also allows further flow of fluid from the spinal canal. When the tap is turned away from the manometer (A) the manometer empties itself but the spinal canal is shut off. If it is desired to inject anything into the spinal canal, the tap may be turned towards the point of the needle, so that the manometer is shut off (C), but it may be thought better to leave the manometer tube open, so that the injection pressure may be gauged and controlled. The forward position of the tap may also be used for replacing fluid with air. It is advisable to sterilise the needle with the stylet out, and with the tap turned towards the handle (B), as in that position water passes freely into the manometer tube from the inside of the needle. In the figure a glass manometer is shown, provided with two sliding clips, by which the initial and final levels of the fluid can be marked and read after the operation is completed.



Messrs. Allen and Hanburys, Ltd., of 48, Wigmore-street, London, W., are the makers.

J. G. GREENFIELD, M.D. Edin., F.R.C.P. Lond.

THE LANCET.

LONDON: SATURDAY, JUNE 19, 1926.

OSLER.[1]

THERE is a phrase in the Psalter, familiar to many from old association in connexion with Commemorations of Founders and Benefactors, a phrase which were it universally kept in mind would mean much for the happiness of the world: *In memoria aeterna erit justus.* To few men is this saying more applicable than to WILLIAM OSLER. Prof. HARVEY CUSHING'S excellent and fully detailed biography has already put on record OSLER'S many activities and his wide and diverse fields of work, and has displayed him as ever striving for the good of his fellows and for the collection and dissemination of knowledge. But a further volume of Appreciations and Reminiscences of OSLER has its full justification, for it is only fitting that the Association of Medical Museums should wish to bear a prominent part in commemoration of one who from the start manifested the greatest interest in the organisation, and who called the first meeting of British medical men for the purpose of organising a British branch of that Association. So here we have a volume of over 600 pages containing appreciations and reminiscences of OSLER in practically every stage of his career.

Most of them come from Canada, the country of his birth, the United States and England, the two countries where his professional labours were mostly carried on; but France speaks through PIERRE MARIE, Italy through MARCHIAFAVA, Germany through KARL SUDHOFF, and China through WU LIEN-TEH (Dr. G. L. TUCK), Director and C.M.O. of the Manchurian Plague Prevention Service. It cannot be expected that the mass of papers contained in this volume should all be of equal merit, but one thing they have in common, and that is whole-hearted and unstinted admiration of their subjects. The biographical section of the book covers 330 pages and is headed by an illustration of the coats of arms or seals of the five Universities which were the scenes of OSLER'S academic activities—namely, Toronto, McGill, Pennsylvania, Johns Hopkins, and Oxford. In regard to the arms of the last we note that the inscription in the book is not the familiar Dominus Illuminatio Mea, but the motto formerly in use, In Principio erat Verbum et Verbum erat apud Deum. The first article in this section is a reprint of an address delivered by Dr. NORMAN GWYN before the Medical Chirurgical Society of Montreal in November, 1920, which gives a delightful account of OSLER'S immediate forbears, his father, and his uncle Edward, who was a medical man, and at one time a surgeon to the Swansea Infirmary. EDWARD OSLER was interested in Marine biology and published sundry papers in Philosophical Transactions on Burrowing and Boring Marine Animals, exquisitely illustrated after his own drawings, some of which are reproduced on p. 113 et seq. This line of study showed itself inherited in WILLIAM OSLER when quite a boy, and was fostered by his admirable teacher, JAMES BOVELL, of Trinity College, Toronto. Following the papers on Early Days are various papers and reminiscences by old pupils and others divided into sections dealing with the Montreal period (1870–84), the Philadelphia period (1885–89), the Baltimore period (1889–1905), and the English period (1905–19). All the reminiscences are interesting, and show the very varied characteristics of the man, one in particular, related by MARIAN OSBORNE, a relative of WILLIAM OSLER, in whose mother's house in Montreal he lived from 1871 onwards, when he was a professor at McGill University, is specially charming. One day in the street he met a drunken old beggar who asked for alms. After some wholesome advice as to drink, coupled with a request that the old man should leave him his hobnailed liver, OSLER not only gave the man some money, but also took off his overcoat and gave him that too. Two weeks afterwards the old man died in the hospital leaving a will in which he bequeathed "my hobnailed liver and his coat to my good friend WILLIAM OSLER." The coat, after disinfection, again passed into the service of the charitable physician. This episode is worthy of St. Francis of Assisi, a saint whom in many ways OSLER resembled.

And so the record goes on, a record of hard work, of helping lame dogs over stiles, of teaching and holding up to the younger generation an ensample of godly life, of sinking his own sorrows, especially that most bitter one of the loss of his only son in the war, in the Lethe of helping others, and of delight in books and their writers and of all real literary culture. OSLER'S admirable Presidential address to the Classical Association in 1919 on the Old Humanities and the New Science perhaps better than any one of his numerous essays and public deliveries displayed his twofold qualities—his energy in aiding, encouraging, and restoring the sick to health, and his abiding joy in the words and the personalities of great thinkers. The facts so diligently and lovingly collected by Dr. MAUDE ABBOTT make a volume worth the possessing.

[1] Appreciations and Reminiscences of Sir William Osler, Bart. With a Classified Annotated Bibliography. Edited by Maude E. Abbott, M.D., McGill University. Being Bulletin No. IX. of the International Association of Medical Museums and Journal of Technical Methods. Privately issued at 836, University-street, Montreal, Canada. 1926. £2.

"ESSENTIAL" HYPOTENSION.

ONE effect of the widespread employment of the sphygmomanometer by physicians has been the detection of a group of cases with a definitely low systolic pressure, apart from such well-recognised causes of low arterial tension as Addison's disease, anaphylaxis, or myocardial weakness; to this group of cases the name of "essential" hypotension has sometimes been given. An appreciable literature has accumulated in the United States concerning these cases, of which the articles of RIESMAN,[1] MOSENTHAL,[2] FRIEDLANDER,[3] and BARACH [4] may be cited. A systolic blood pressure below 110 mm. Hg is usually taken as indicative of this condition. In 10,142 male subjects 279 cases of essential hypotension were noted, giving an incidence of about 3·5 per cent., but other observers have placed the percentage as considerably higher. The symptom-complex said to result from the hypotension is one sufficiently familiar to all medical men, and yet so nebulous that the critical physician may well cavil at the verbal description of it. Dr.

[1] D. Riesman: Atlantic Med. Jour., 1924, xxiv., 484.
[2] C. H. Mosenthal: Nelson Loose-Leaf Medicine, iv., 506.
[3] A. Friedlander: Jour. Amer. Med. Assoc., 1924, lxxxiii., 167.
[4] H. J. Barach: Arch. Int. Med., 1925, xxxv., 151.

FOSSIER,[5] of New Orleans, in a recent communication, puts it in these words:—

"Mental and physical fatigue are the predominant symptoms of essential hypotension, which, I think, can safely be attributed to the lowered arterial pressure. These patients tire easily, and it is with the greatest difficulty that they can concentrate attention upon their work. Memory is thereby impaired, so much so that these subjects are mental defectives, to the degree that they cannot perform the day's work of their more fortunate brothers . . . the intensity of their symptoms is alleviated in the recumbent position, and increased in the upright. Vertigo and headaches are frequently present. These subjects are, as a rule, hypochondriacs and neurotics . . . the extremities are usually cold, cyanosed, moist, and numb . . . the skin and conjunctivæ are pale and present an anæmic appearance, which is frequently diagnosed as some serious anæmia, but the blood is generally normal in its count and hæmoglobin content."

Capillary hypotension from histamine poisoning, decreased tissue-respiration, and exhaustion of the suprarenal glands are amongst the modern hypotheses advanced to explain this state. It is hardly necessary to add that the same disorder has enjoyed many previous explanations varying from nervous exhaustion to chronic intestinal stasis. FOSSIER, in the recent article we have already quoted, points out the extreme frequency of hypotension and this group of symptoms amongst splanchnoptotic subjects, and finds in the dropping of the diaphragm and consequent elongation and narrowing of the aorta the explanation of the decline in blood pressure; the hypotension is, he concludes, merely a symptom of the dropping of the thoracic and abdominal viscera. With such a conclusion we are inclined to agree, making the obvious reservation that it affords no explanation of the general ptosis. Loss of tonus is the outstanding feature of these cases, and whether this results from a disturbance of the normal outflow of impulses from the central nervous system, or whether it results from an intoxication of muscular tissues are questions still to be answered. The most important conclusion that can at present be drawn would seem to be that it is not upon any single organ that attention should be riveted; the stomach, or the heart, or the uterus, or the kidney may attract notice, but to treat one of them alone is to court disaster. Nor would it seem that excessive inspection of the vascular tension is likely to lead to dramatic benefit. The use of the phrase "essential" hypotension is, in fact, to be deprecated until our knowledge has been further extended.

VENEREAL DISEASE LEGISLATION.

IN the campaign against venereal disease strategy dictates the earliest possible treatment of the greatest possible number of persons affected. Success is to be attained, first, by organising the facilities for treatment, and, secondly, by inducing patients to take advantage of them. From these premisses the authors of a recent article in the *Bruxelles-Médical* proceed logically to the conclusion that, if any of these patients will not trouble to have recourse to treatment, there is both a right and a duty to employ compulsion. As the only method of compulsion is compulsion by law, they briefly review the present legal position in various countries and then formulate legislative proposals of their own. The three authors are Mr. CH. AUDRY, professor of the Medical Faculty at Toulouse; Mr. H. RAMET, first President of the Court of Appeal at Toulouse; and Mr. GABRIEL MARTY, an advocate of that Court. They cherish no illusion that mere legislation can bring in the millennium; they realise that public opinion must be considered in any proposal to which public assent is required; they do not expect to procure many convictions under their law, but they think it will bring pressure to bear where it is wanted, will lay down a necessary principle, and will arm society against a grave peril. They are primarily proposing their legislation for France; it is to fit in with the civil and penal codes of that country. The authors mention an enactment in force in Quebec, but have taken no account of the legislation of Great Britain. The English and French legal systems differ widely; nor is public opinion in England and France likely to coincide as to the form which legislation upon the subject of venereal disease should take. Nevertheless the proposed law is well worth examination.

It begins by confining itself to syphilis. Other forms of venereal disease, say the authors, are admittedly serious, but do not endanger the nation or the species. The English Venereal Disease Act of 1917, it will be remembered, applies not only to syphilis but also to soft chancre and gonorrhœa. In Clause 2 of what in England we should call their Bill the authors set out the duty of anyone who is attacked by syphilis to obtain treatment from a medical practitioner. Clause 3 proposes to enact that a doctor, called in to verify the existence of syphilis, must give the patient a notice advising him of the fact of his disease, of the risk of contagion and its duration, and of the penalties imposed by law on anyone who communicates the infection to another. The doctor is to obtain from the patient a written acknowledgment of this notice; he will endorse upon it the results of his inquiries as to the source of infection, and he is to keep the document in his possession for six months and must communicate it, if required, to the Procureur de la République. The patient, having thus received notice, is obliged to notify the departmental Conseil d'Hygiène on a prescribed form. Doctors infringing this provision, or officials violating professional secrecy, are punishable by fine of from 100 to 3000 francs, a second offence being punishable by imprisonment. Clearly the authors would have liked to take the more direct and logical course of making the doctor report the disease to the public authority, so as to make more sure of notification and so as to establish a comprehensive central record of great value in eradicating the disease. But they realise that this course (which has apparently been adopted by Sweden and Czecho-Slovakia) would antagonise professional traditions of secrecy. They therefore make the doctor merely the guardian of the document. He does not have to denounce his client, but is merely called in (in the event of a prosecution) by the judicial system of the country in order to give evidence of what English lawyers call the *scienter*. Presumably he produces in court the patient's written acknowledgment. If the patient duly reported his illness himself to the departmental health authority as proposed, the doctor's evidence will perhaps be unnecessary. Under Clause 4 a doctor who is prepared to certify that the danger of infection is over for a certain time can give the patient a certificate to that effect. This protects the patient from penal consequences for the period specified; but if there is infection during or after that period the patient must consult the doctor afresh. At this point there comes a group of clauses containing various

[5] A. E. Fossier: Amer. Jour. Med. Sci., 1926, p. 496.

penalties for communicating syphilis. Mere communication is visited by a fine of from 100 to 3000 francs, with imprisonment for a second offence. If a man who knows or ought to know the danger of his act exposes another person to the risk of infection the penalty is imprisonment for from six months to two years and a fine of from 500 to 3000 francs; this penalty is doubled if there has been actual infection. Deliberate infection is punishable with heavier penalties still. All the punishments in this group are to be doubled if the offender has failed to comply with the already mentioned obligation of obtaining treatment from a doctor. They are also doubled if the victim is under 15 years of age. If the offender is still a source of infection the tribunal may order him to be placed under treatment or medical surveillance for five months or more. A victim of infection is given the right to damages except when the risk of communicating infection was known and voluntarily accepted, but the action must be brought within six months. The tribunal can hear all cases in camera, but judgment must be given publicly, though the name of the victim (if the latter so desires) may be indicated merely by initials. A provision is added against blackmail. Another clause applies Article 463 of the Code Pénal, thereby enabling the judges to take into account extenuating circumstances and to mitigate penalties. Finally there is the usual administrative provision for making regulations and prescribing forms.

Readers will have formed their own opinion as to how quickly we shall see any such law as this passed by the Parliament of the United Kingdom. Our existing legislation is characteristically piecemeal. We had, of course, in England the Public Health (Venereal Diseases) Regulations of 1916, directing local authorities to make schemes for institutional treatment and for the supply of salvarsan or its substitutes to medical practitioners, the local council being placed under the obligation to arrange to carry out the scheme as soon as the central authority approved it. Councils were also to arrange for local practitioners to obtain scientific reports on material submitted from suspected patients, and were permitted to provide for instructional lectures on venereal disease and for the publication of information as deemed necessary or desirable. Then in 1917 Parliament took the very practical step of restricting advertisements of remedies and prohibiting the treatment of venereal disease otherwise than by a duly qualified medical practitioner. The latter prohibition, it will be recalled, was to become applicable in local areas as soon as approved schemes for gratuitous treatment began to operate therein. Such schemes are gradually covering the country. Another useful enactment of a minor kind was the amendment in 1923 of the Merchant Shipping Acts, whereby the cost of medical attendance for masters and seamen was thrown on ship-owners (without power to deduct from wages) in the case of venereal disease as it was already in the case of other illnesses. We have admittedly no broad and comprehensive measure on the whole subject; there is a national hesitancy to examine the problem or even to recognise its existence. Possibly history will repeat itself and national legislation will be preceded by local legislation in certain progressive districts. Attention has already been directed to the Bradford Corporation Act of 1925. Section 68 applied the Infectious Disease (Notification) Act of 1889 to venereal disease, experimentally for a period of five years, in certain cases. Those cases are: (*a*) infants under 2 years of age suffering from such disease, and (*b*) persons (other than children) who refuse or neglect to undergo further treatment for such disease after being informed by a medical practitioner, or by the medical officer, that such treatment is necessary. The Bradford clause may be the forerunner of legislation of general application.

Annotations.

"Ne quid nimis."

RADIOLOGICAL INVESTIGATIONS ON THE ACTION OF PURGATIVES.

RADIOLOGY, besides having provided a noticeable contribution to the diagnosis and therapeutics of diseases of the digestive system, has still some important problems to take in hand from the point of view of physiopathology and pharmacodynamics, and not the least important of them is the action of various drugs on the tone and motility of different segments of the intestine. The literature on this subject has not been commensurate with its importance, and observations on the action of drugs on the intestines such as those of Magnus have been made only on animals. Prof. P. Alessandrini,[1] of Rome, has made a series of experiments on the action of saline purgatives and drugs of the anthraquinone group (cascara, phenolphthalein), of podophyllin, and castor oil. He used barium sulphate in preference to bismuth because the former has no influence on the rate of evacuation of the stomach and intestines, while, as has been shown by Best and Cohnheim, the latter causes a certain degree of retardation. The amount given was 100 g. in 300 c.cm. mucilage, and every patient was subjected to examination immediately and after repeated intervals up to 48 hours after the opaque meal. Normally the jejunum is full in the first half hour, and after about two hours the opaque meal occupies the ileum. The passage into the cæcum begins generally after the second hour, and after six or seven hours the ileum is empty and the meal occupies the ascending and as far as the middle of the transverse colon (Cannon's ring). After 24 hours the whole colon is full and at the end of 48 the meal is evacuated.

As a principle of physiopathology it may be affirmed that in order to produce a purgative action it is necessary that the purge should act on the colon, since a greater rapidity in emptying the stomach and small intestine may be accompanied by a greater stagnation in the colon. The action of various drugs, therefore, is expended either on the colon alone or on the colon and small intestines simultaneously. Under physiological conditions two zones exist in which stimulation induces an expulsive peristalsis. One consists of the cæcum and ascending colon, the stimulation of which determines the great peristaltic movement of Holzknecht, which originates in the cæcum and continues as far as the transverse and descending colon unless there is a spasm of the proximal portion of the transverse, the so-called Cannon's ring. The other consists of the ampullary portion and rectum, whose stimulation may provoke reflexly a large expulsive movement such as may be caused by a glycerine suppository or the very act of defecation. It is well established that saline purgatives are not only absorbed with difficulty but also prevent the water in the intestines from being absorbed, hence the contents of the colon are rapidly eliminated. The sulphates, moreover, produce a certain amount of sulphuretted hydrogen which acts as a stimulant to peristalsis. From his radiological experiments Prof. Alessandrini found that after the administration of 40 g. of saline in 250 c.cm. of water, in only one case was there caused a slight acceleration in emptying the stomach and small intestine, while in the other cases evacuation of these organs occurred normally, the gastric tone and peristalsis not being in the least degree modified. This would seem to show that the administration of small doses of sodium sulphate after meals in cases of gastric atony has no experimental foundation. So much the more that in the one case of slight acceleration noticed, the stomach showed feeble peristalsis and atony, and the acceleration was

[1] I problemi della Nutrizione. Giornale di fisiopatologia di clinica e di dietetica. May–December, 1925, Rome. Via San Nicolo da Tolentino.

connected with a slight degree of pyloric insufficiency. On the rest of the intestines there was but a slight acceleration in emptying the cæcum and ascending colon, the principal action being expended on the second portion of the colon. This is confirmed by coprological investigations which show that the alimentary residua after purging with sodium sulphate are much less than with other purgatives. Consequently, as a reducing agent sodium sulphate is the least indicated as a purge. In four patients examined after the administration of Carlsbad salt (two teaspoonfuls in 200 c.cm. of water) there was in every instance a slight increase in gastric and intestinal motility; the chief action, however, was on the second portion of the colon and no doubt due to alkaline sulphates. This action of the sodium chlorides and bicarbonates in the Carlsbad salt justifies its use in chronic gastric intestinal affections; its action on cholecystitis is, however, doubtful.

In experiments with substances of the anthraquinone group (cascara, rhubarb, senna, and aloes) it was found that these were absorbed but slowly and incompletely; their purgative action is delayed because the decomposition which liberates their active principle (emodin) takes place but slowly. In large doses there was marked spasm with pain without, however, any indications of true inflammatory phenomena. Differences in the action of cascara and podophyllin are of some practical interest. Cascara invariably caused a certain retardation in emptying the stomach which lasted from one to two hours. This retardation was noticed also on the small intestine. Its action on the ascending colon was negative and was expended almost exclusively on the transverse. Usually the colon up to the splenic flexure filled normally; when the opaque meal reached this point there was active peristalsis and a complete evacuation in 10–12 hours after administration of the drug. This delayed action is due to the fact that the liberation of the active glucoside takes place by slow decomposition. On the other hand, podophyllin showed an acceleration in emptying the stomach and small intestine, the stimulant action on the peristalsis of the colon being manifest even on the proximal portion. Hence when it is desired to act on conditions of diffuse atonic constipation it is better to give cascara alone, provided that gastric atony is not also present. If, on the contrary, it is wished to act on cases of constipation of the ascending type especially associated with catarrh of the small intestine, then the preference should be given to podophyllin, which in small therapeutic doses does not give rise to any inflammatory action. When atonic constipation is associated with gastric atony it is advisable to combine cascara and podophyllin. Phenolphthalein, which by its chemical constitution belongs to the anthraquinone group, behaves differently in its therapeutic effects. It has the advantage, like all laxatives of this group, of not irritating the gastro-intestinal membrane. Its action in doses of 20 cg. is that, while it does not modify the rapidity of evacuation of the stomach and first part of the small intestines, it stimulates specially the peristalsis of the ileum and cæcum. Hence in constipation of the ascending type it is the ideal purgative, since moreover it does not cause pain and its action is manifest after three or four hours as soon as the gastric contents have reached the cæcum. Radiology disclosed some interesting facts regarding the action of castor oil, which acts especially on the small intestine without irritating it, by reason of the pancreatic juice which breaks it up into glycerine and ricinic acid. It was noticed, moreover, that there was always a retardation in gastric evacuation owing to paresis of gastric motility which, however, was regained after an hour. There was very rapid transit through the small intestine and throughout the whole length of the colon, being most marked in the proximal portion. This explains the efficacy of this drug in ensuring a rapid and complete evacuation of the whole intestine. Its continuous use, however, should be avoided on account of its harmful influence on the movements of the stomach.

These observations do not pretend to have solved definitely all the problems in relation to the action of various purgatives and the indications for their use, but they serve to show that radiological methods are valuable in the study of the complex questions of experimental pharmacology.

LIME BURNS OF THE EYE.

AMONG industrial accidents to the eye lime burns of the cornea due as a rule to mortar or cement hold an important place, the resulting opacity being due not only to the actual destruction of corneal tissue but to the deposition of particles of insoluble calcium carbonate. A method of treatment founded upon the knowledge of this fact was recommended by zur Nedden at the Heidelberg Ophthalmological Congress in 1905, but although mentioned in Fuchs's, Römer's, and Parsons's text-books it does not appear to be generally known. Mr. E. Wolff, in the April number of the *British Journal of Ophthalmology*, in stating these facts gives details of two cases successfully treated, and tells us that the method is now in routine use both at University College Hospital and at Moorfields. The method consists of daily irrigation for a period of 15 minutes with a solution of 10 per cent. neutral ammonium tartrate. By this means the insoluble calcium carbonate is converted into the slightly more soluble calcium tartrate which is slowly washed away. In recent cases it is necessary thoroughly to cocainise the eye as a preliminary to treatment. In an acute case of this sort, in which vision was at first reduced to counting fingers, it was restored to normal after six weeks' treatment. In another patient who had already been treated for a month elsewhere the vision was improved from 6/60 to 6/12 after two months of the ammonium tartrate treatment. These successes should be noted by medical officers who work in industrial districts.

PROFESSOR KROGH: A DEDICATORY VOLUME.

A COLLECTION of papers[1] of considerable interest and instruction to physiologists has recently appeared on the occasion of Prof. Krogh's fiftieth birthday, as the result of the wish of his numerous pupils and co-workers to acknowledge and commemorate the lasting debt owing to him as their teacher and friend. Dr. J. Lindhard points out in the preface that the occasion also marks the removal of the old laboratory in Ny Vestergade to the new building which will be erected by the Rockefeller Foundation for the purpose of Danish physiological research. "That removal will cause an increase of activity, but no other change. The delight in work which prevailed in the old place will never be exceeded, and the quality of the work will hardly be altered, but numerous students for whom there was not room enough at Ny Vestergade will now get their chance, and Krogh himself will obtain a suitable place of work, a convenience which he has of recent years only too often given up to others." The volume contains in all 22 papers of diverse nature, a few of which merit special attention. An account is given by Dr. L. S. Fridericia of work carried out by himself in the University Institute of Hygiene in Copenhagen, on the influence of the Jonas-Nielsen sterilising process on the A-vitamin content of milk. This process by which milk is brought rapidly to a temperature of 130° C., out of contact with air, and as rapidly cooled, was found to have comparatively little effect on the vitamin content, 3 c.cm. of the sterilised milk containing at least as much A-vitamin as 2 c.cm. of the same milk in the raw state. The results of this investigation form a useful parallel to those previously obtained by Gowland Hopkins, working with butter. Dr. H. C. Hagedorn communicates an interesting and valuable piece of work on the regulation of the blood-sugar. It is shown that whereas in the fasting subject there is no

[1] Physiological Papers, dedicated to Prof. August Krogh, Ph.D., LL.D. London: Wm. Heinemann (Medical Books) Ltd. 1926. Pp. 375. 30*s*.

appreciable difference between the sugar content of the arterial and that of the venous blood, after ingestion of sugar the former runs for some time at a decidedly higher level than the latter. On the assumption that approximately half the right auricular blood has the same composition as that in the cubital vein from which samples for analysis are taken, it is found that almost the whole of the sugar ingested is absorbed in the periphery. In order that this observation may be brought into line with the known function of the liver as being a storehouse for carbohydrate, the hypothesis is put forward that alimentary hyperglycæmia covers two processes—viz., (1) a hyperglycæmia caused by the sugar which is carried through the portal vein to the liver, passes this and is deposited in large amount in the peripheral tissues; and (2) a hyperglycæmia caused by sugar carried to the peripheral tissue from the liver, but this transportation does not come into action until the absorption from the intestine has ceased or almost ceased.

Dr. G. Liljestrand and Dr. A. V. Sahlstedt contribute an important addition to the subject of gas diffusion through animal membranes. Using the frog's lung they find that the rate of diffusion of gases is proportional to $V^{\frac{4}{3}}$, where V is the volume of the lung, a result which was to be expected from mathematical considerations. Temperature changes, however, affect the rates of diffusion of CO_2 and of C_2H_2 in a very different manner, a change of temperature from 0·8° to 37° hardly affecting the rate of diffusion of CO_2, whilst causing a marked increase in the rate of diffusion of acetylene. These differences are so far unexplained on a physical basis, since in both gases a marked diminution in the rate of diffusion with rise in temperature was to be predicted. It is pointed out, therefore, that the solubility of each gas is probably very differently influenced by the components of the tissue forming the alveolar wall. Among other contributions of interest is one by Dr. Bj. Vimtrup on the structure of the Malpighian bodies in the human kidney. Though it has long been recognised that the glomerular tuft is divided up into several clusters of capillaries and that the visceral layer of Bowman's capsule is reflected into the spaces between these clusters, evidence is now brought forward that each capillary loop is covered, independently of the remainder, by a reflection of this membrane. The surface at which filtration may occur thus becomes very much greater than that which the more common histological descriptions of glomerular structure would have us believe.

The editors and publishers deserve congratulation on the collection in such attractive form of an interesting and stimulating series of papers

THE DUSSELDORF MEDICAL EXHIBITION.

THE great medical exhibition now being held in Dusseldorf may be fairly described as a medical Wembley. The word Gesolei, by which it is known for short, is compounded of Health (Gesundheitspflege), Social Welfare (Sociale Fürsorge), and Physical Culture (Leibesübungen), and here by every possible means these subjects are brought before the notice and imagination of the public. Prof. Arthur Schlossmann and his capable assistant, Dr. Liesegang, the moving spirits of the exhibition, are to be congratulated on the result of their efforts during the past twelve months. Here, illustrated by large-scale diagrams, maps, working models, and miniatures of hospitals, convalescent homes, health centres, and the like, are room after room and corridor after corridor filled with structures designed to illustrate every phase in the development of health insurance, public health, and preventive and curative medicine. The building and engineering trades have contributed their part and the result will interest public health officials, general practitioners, and social welfare workers. In Germany health insurance is compulsory for everyone with an income under £250 per annum, and voluntary subscribers are accepted over this level without income limit, with the result that private practice is said to have shrunk to 20 per cent. of its former extent. The great majority of German practitioners are, therefore, vitally interested in the proportion of insured funds which go to sick pay, maternity benefit, unemployment pay, maternity, hospital, and medical services. The visitor whose patience and stamina will bear the strain can learn all these things in one day at the Dusseldorf Gesolei. Relaxation is afforded by bands, restaurants, miniature railway, and the whole exhibition is picturesquely situated on the banks of the Rhine. The official catalogue in German contains 420 pages of letterpress and numerous plans, while shorter explanatory pamphlets in English are available. The exhibition remains open until October.

THE LATE EFFECTS OF POISON GAS.

BEFORE the Disarmament Drafting Subcommittee concluded its labours it adopted Lord Cecil's proposal that the Military and Economic Subcommittees should study the effects of poisonous gases used in warfare and give an opinion as to the best means of preventing their employment in future. In such an investigation the remote effects of any gas are as important as the immediate. The nature and the degree of permanent disturbance of the respiratory and other systems that may be fairly attributed to gassing during the war is still uncertain, though a large amount of material should be available for study in all belligerent countries. In America the problem is now being attacked by an attempt to investigate the present or recent condition of some 70,000 ex-Service men whose hospital records show that they have been gassed. The members of the Board appointed by the United States Veterans Bureau to organise the investigation include Dr. Philip B. Matz, Chief of the Medical Research Subdivision of the Bureau; Dr. A. K. Krause, Associate Professor of Medicine, Johns Hopkins University Medical School; and Lieut.-Colonel H. L. Gilchrist, Chief of the Medical Research Division of the Chemical Warfare Service, U.S. Army. The Board is not concerned with the better-known and more immediate effect of war gases. It particularly desires information on several points:—

1. Does any war gassing received in action result in disability which is relatively lasting and permanent?

2. Does it cause lasting anatomic (pathological) changes, with or without disturbance of function (symptoms and disability)?

3. What organs or systems may thus be permanently affected or disturbed?

4. What symptomatology may exist under these circumstances?

5. If war gassing does produce relatively permanent effects, may a similar condition or conditions be produced by other agencies (diseases such as influenza, tuberculosis, effort syndrome, &c.)?

The term "lasting" or "permanent," as used above, means such late residual or remote changes that continue down to the present time and are appreciable.

Those who are in a position to coöperate in the projected study by offering impressions from their personal experience are asked to communicate with the United States Veterans Bureau, Washington, where reprints of relevant articles will also be received with appreciation. The most difficult point in the questionnaire to answer categorically will probably be No. 5. If it be found that war gassing may produce relatively permanent effects, are these of a peculiar nature or might they equally well have been produced by other agencies? Symptoms or lesions produced by an individual chemical agent may easily be recognisable shortly after the time of injury, but after a term of years the body's healing process, which is essentially that of absorption and fibrosis whatever the nature of the insult to the tissues, is more than likely to mask their characteristics. The existence of a late lesion pathognomonic of gassing would have to be confirmed by its demonstration

in a large number of human victims unless, of course, it could be substantiated by animal experiment. In the course of researches, published on p. 1192 of this issue of THE LANCET, on guinea-pigs exposed to the inhalation of mustard gas in a concentration of 1 in 20,000, Surgeon-Commander McCowen found histologically that the upper air passages, and the greater part of the bronchial tree, in addition to the lungs, were invaded by leucocytes in every stage of disintegration. After subcutaneous injections of the gas or applications to the skin the same invasion is seen at the sites involved, directly attributable to the intense reaction set up by mustard gas. Surgeon-Commander McCowen regards the increase in the hæmobactericidal power of the blood after exposure to this gas or to other tissue-destroying substances such as hydrochloric acid, formic acid, and liquor epispasticus, as due to release of antibacterial elements into the blood from disintegration of leucocytes at the site of damage. That the hæmobactericidal power of the blood is undoubtedly increased—the more severe the exposure the more pronounced the increase—is evident from the protocols of the experiments attached to his communication in the form of an appendix which space did not allow us to publish. This interesting observation, however, has little bearing on the problem of permanent effects, since presumably the blood reverts to normal in the course of a few days. But the histological study of the tissues, especially the respiratory passages, of guinea-pigs who have been exposed to the same concentration of inhaled gas and have survived for months or years might well throw light on the process of healing, of which the intense leucocytosis observed is presumably the first stage. The scarring may take some characteristic form which could be looked for in the autopsies of men known to have been gassed. By the correlation of such experimental findings with clinical observation it is at least possible that the Veterans Bureau may collect enough evidence to abolish gas warfare from among the weapons of civilised warfare.

SOME EARLY AND LATER HOUSES OF PITY.

Dr. Hobson is already well known by his charming little Book of the Wandle (that rivulet whose defilement was eloquently mourned by Ruskin) and also as a protagonist in defence of Whitgift's Hospital, which some, unworthy of their inheritance, are anxious to pull down. In fact, the book now before us[1] grew from the desire of Dr. Hobson to write more fully than he had hitherto done about this hospital, and therefore to write about other hospitals prior to or contemporary with Whitgift's. The author says in his preface that his book owes much to Miss R. M. Clay's "Mediæval Hospitals of England" and still more to Dugdale's "Monasticon." He confesses that he has only made a selection from the many ancient hospitals and thus inevitably has left out something which somebody else thinks should be there. We for our part are surprised that Dr. Hobson has omitted any mention of St. Bartholomew's, Rochester, or rather Chatham, a foundation older than the better known house in Smithfield by some 15 years; it was founded before 1108, is still in use, and the original chapel remains. Neither does he describe the Spital of St. Katherine in Rochester, which is still in being; this foundation is comparatively modern, being founded in 1316. It is sad to see how many of these useful foundations fell on evil days, mostly in the great spoliation under Henry VIII., but some before this date owing, it must be confessed, to unworthy masters or governors. The original intentions of the pious founders were as nothing in the eyes of Henry VIII., of his bully, Thomas Cromwell, or of sundry commissions of later date, an admirable sketch of whose actions and the results thereof was given by Anthony Trollope in "The Warden." Dr. Hobson writes about Whitgift's Hospital and its archiepiscopal sister, Abbott's Hospital at Guildford, with a natural affection. We like his advice to his readers: "Go and see for yourselves, as, indeed, many do from all quarters of the world, including even some of the townspeople of Croydon." A whole chapter is devoted to the beautiful hospital (God's House) at Ewelme. This hospital, which was founded by William de la Pole, Duke of Suffolk, remained in the same family until 1525, when the last de Pole was killed at Pavia. Later on James I. annexed the mastership to the Regius Professorship of Medicine at Oxford, and until quite recently the Regius Professor of Divinity was ex officio rector of the parish. Dr. Hobson notes (p. 72) the statue of Alice de la Pole represented in her shroud, and gives a footnote by Mr. R. Hutchinson stating that these shrouded figures came in about the fifteenth century and lasted through Tudor times. Among the most notable existing ones is that of Dr. Donne, now in St. Paul's Cathedral, the only monument from the old building which escaped the fire. There are also fine examples in Maidstone Parish Church, being monuments to the Astley family circa 1600.

[1] Some Early and Later Houses of Pity. By John Morrison Hobson, M.D., B.Sc. London: George Routledge and Sons, Ltd. 1926. Pp. 199. 10s. 6d.

CONTAGIOUS ABORTION.

THE organism which in the new nomenclature is called *Alcaligenes melitensis* lives naturally in goats and causes Malta fever when it infects man. The microbe *A. abortus* commonly lives in cattle and causes widespread losses of calves in this and other countries. The two species are extremely closely related to one another, and, apart from their pathogenic effects, the bacteriologist has to use his most refined serological technique to distinguish one from the other. Evidence has now accumulated that *abortus* may occasionally cause a vague febrile disease in man of the genus P.U.O.; some recent cases are described by Dr. I. F. Huddleson in America.[1] And it will, perhaps, be a surprise to many people to learn that English milk contains *A. abortus* quite frequently. In the last number of the *Journal of Pathology and Bacteriology*, the principal contents of which have already been summarised, Dr. G. S. Wilson and Miss Muriel Nutt, working in the Public Health Laboratory of the University of Manchester, narrate their discovery of this organism in about 8 per cent. of the samples of milk examined. This does not indicate any serious danger to human health; considering the amount of exposure to which cowmen must be subject, human infection is evidently very rare. But the recognition of its possibility will help to explain a few cases of obscure illness. The serum of a case of Malta fever will agglutinate both *melitensis* and *abortus*, and the serum from a case of *abortus* infection will, by the ordinary methods of testing, give a positive Widal reaction with both organisms too. Hence, presumably, come the odd examples of Malta fever which have been suspected to arise in this country. For it is now known that *abortus* antibodies can be found in a sensible proportion of samples of serum taken from children who have consumed cows' milk. And the probability seems to be that *abortus* in milk may actually be useful as a preventive of Malta fever; Khaled [2] showed that monkeys and goats can be immunised against *melitensis* by vaccination with *abortus*, and Nicolle suggested that this might be a useful method of human protection. The reverse can presumably also occur, and this may explain the old custom, more or less prevalent throughout Britain, of running a goat with a herd of cows to prevent miscarriages. Attention has several times been drawn to this.[3] Farmers have inverted a variety of explanations of the ha' it; but the facts now known suggest at once th t the goat acts as a prophylactic because the

[1] Jour. Amer. Med. Assoc., 1926, lxxxvi., 943.
[2] Jour. Hygiene, 1924, xxii., 335.
[3] THE LANCET, 1922, ii., 546, 743; Brit. Med. Jour., 1925; ., 764.

melitensis which he so often carries vaccinates the cows against Bang's bacillus. The French have lately been concerned with the increasing prevalence of human Malta fever in their country and the commission charged to examine into the facts have recently published some extremely interesting maps [4] which, at any rate, fit in well with this idea of vicarious vaccination. Human Malta fever is confined to the departments in the south-east, and epizootic abortion in goats and sheep (due to *M. melitensis*) has, as is natural, almost the same geographical distribution. But another map shows that epizootic abortion in cattle (due to *M. abortus*) is prevalent throughout France except in these same south-eastern departments. It may be that where there are many goats there are few cows, but the facts strongly suggest that Malta fever and bovine abortion are in some way antagonistic to one another—which English farmers seem to have found out before bacteriology was thought of.

FAT METABOLISM IN INFANTILE ATROPHY.

THE pathogenesis of infantile atrophy has been for many years one of the vexed questions of pediatrics, and it would probably be a fair statement that, while much has been written on the theoretical aspect of the subject, yet the theoretical considerations have been comparatively unhelpful from the point of view of prevention or of treatment. The principal reason of this slender therapeutic result, achieved by so much laborious work, is that so many of the theories of the pathology, with their consequent methods of treatment, rest upon major premisses which are feebly established and have not stood the test of time. There are few medical problems on which so great a variety of opinions are held, but a rough line of cleavage exists between the followers of the French school as represented by Prof. Nobécourt and Prof. Marfan, who adopt a somewhat non-committal clinical classification and stress the constitutional factor, and the disciples of Czerny and Finkelstein, who have been led by the result of biochemical experiment to associate infantile atrophy with the deleterious effects of various constituents of food. Czerny's discovery that the so-called curds found in infants' stools were really composed of fat was an observation of considerable clinical importance, and served to refute the older idea that the casein of cow's milk was the refractory element in the diet. The theory which resulted from the work of Czerny and Keller based the pathogenesis of infantile atrophy on a deficient assimilation of fats, and a consequent excess of fatty acids in the bowel, leading to a "demineralisation" of the body by removal of the alkalies which were required to neutralise them. The experiments on which this view rested have been repeated by a number of workers, notably by Holt in America, and have by no means always been confirmed. Dr. L. G. Parsons, whose Goulstonian Lectures two years ago [1] provided the English reader with a most lucid and impartial survey of this subject, has been foremost among British pediatrists in investigating fat metabolism in infantile atrophy. On a former occasion he studied the relation of the urinary ammonia output to the fat intake, and did not confirm Keller's observation that the ammonia was increased by raising the fat content of the food. In a recent communication [2] he has presented the results of experiments carried out by himself and Miss Hickmans, in the light of which Czerny's major premiss appears to be of doubtful validity. A series of marasmic infants were investigated, the fat content of the food and the amount of fat—total, saponified, neutral, and fatty acid—of the fæces being determined. Dr. Parsons points out that if diarrhœa is present the assimilation of fat is necessarily defective owing to peristaltic hurry; for this reason cases exhibiting diarrhœa were excluded. The results of the investigation are given in tabular form, and show that the absorption of fat took place to the normal extent of about 4 g. per kilo of body-weight, and hence that there is no essential defect of fat metabolism in atrophic infants. The absorption of fat was found to vary considerably with different forms of diet; with the same fat intake a higher degree of absorption was obtained with diluted cow's milk than with dried humanised milk. Taken in conjunction with other experiments and clinical observations which are referred to, these results have led Dr. Parsons to reject Czerny's views on the treatment as well as the pathogenesis of atrophic infants, and to believe that an adequate supply of fat (about 4 g. per kilo of body-weight) is essential to their dietary.

[4] Reproduced in the Tropical Diseases Bulletin, 1926, xxiii., 349.
[1] THE LANCET, 1924, i., 687.
[2] Birmingham Medical Review, April, 1926.

THE HENRY FORD HOSPITAL.

IN 1909 citizens of Detroit, Michigan, deeming a new hospital essential to meet the development of the city, inaugurated a campaign to provide one. In 1914, however, Mr. Henry Ford gave a hand, with the result that the hospital associated with his name was opened in October, 1915. Its further development was to a certain extent handicapped by the war, but at the present day it comprises buildings scattered over an area of 20 acres in the centre of Detroit, and includes a thoroughly equipped modern hospital with a large educational establishment and a magnificent nurses' home, which bears the name of Clara Ford. Thanks largely to the munificence of the founder, the staff of the hospital has recently published a large volume of collected papers,[1] which testify that during the first ten years of its existence this hospital has served one of its main purposes—medical research. The volume contains nearly 50 papers and articles with 151 illustrations and 42 charts. H. P. Doub, A. Bolliger, and F. W. Hartmann contribute an important study on the immediate metabolic disturbances following deep X ray therapy, confirming to a large extent the work in this country reported in these pages by E. C. Dodds and J. H. D. Webster.[2] Interesting papers on obstetrics are reprinted, including two on the placental transmission of certain constituents of the blood by L. J. Bogert, E. D. Plass, and C. W. Matthew. F. J. Smith and R. D. McClure describe two cases of angina pectoris treated by cervical sympathectomy with substantial decrease in the frequency of the seizures, but in neither case was relief complete. E. C. Davidson contributes a very complete study of tannic acid in the treatment of burns. Tannic acid was used either in the form of compresses moistened with a 5 per cent. solution or as a 5 per cent. ointment with lanolin and vaseline. A study of 25 cases leads to the conclusion that tannic acid acts as an analgesic, that its use lessens toxæmia, that its astringent action decreases the loss of body fluid, and that secondary infection is markedly limited. On the medical side R. D. McClure deals with the treatment of pernicious anæmia by splenectomy and repeated blood transfusions, and R. H. Major describes the treatment of empyema by simple aspiration followed by the introduction of a solution of gentian violet into the thoracic cavity. An appendix contains notes on certain technical appliances, and a foreword by Dr. F. J. Sladen, physician in chief, is full of wise sayings on the subject of medical research. The book is sumptuously produced.

[1] Collected Papers by the Staff of the Henry Ford Hospital. First Series. 1915–25. New York: Paul B. Hoeber, Inc. 1926. Pp. 634. $8. [2] THE LANCET, 1924, i., 533.

EPSOM COLLEGE.—Founder's Day will be held on July 24th. Viscount Grey of Fallodon will present prizes at 2.45 P.M. and will then open the new chemical block, which has cost over £10,000. The important alterations and additions recently made at the Lower School will be ready for inspection, and the oak decoration of the chancel of the memorial chapel will be open to view for the first time. Expenditure this year has been over £20,000, and the proposed additions to the school will involve at least another £25,000 in the near future.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CLXXVII.—THE TREATMENT OF ANÆMIA.

II. CHLOROSIS AND SECONDARY ANÆMIA.*

(*a*) CHLOROSIS.

THE most remarkable fact concerning chlorosis is its almost complete disappearance within recent years. Obviously, the reason for its disappearance should reveal its treatment. The great improvement in conditions of labour, and the passing of the sampler and the "accomplishments" in favour of outdoor games among girls seems to afford the explanation. Chlorosis is probably induced by deficient oxidation during a period of active bodily development. Insufficiency of active exercise leads to lessened oxidation. The diminished oxidation leads to a less demand for the oxidising agent and the blood becomes poor in hæmoglobin. A vicious circle is thus established and the chlorotic girl becomes unfit for exercise. The theory that chlorosis is due to the wearing of tight corsets seems to be merely a part of the truth. On occasion the corset by interfering with respiration and by making exercise impossible may have played a part, but it may be said that the hockey stick and the fox trot have banished corsets and chlorosis together. A girl may suffer from over-work and fatigue and yet not become chlorotic. It is the lack of *active* exercise which is the important factor. The main difficulty to be overcome in the management of chlorosis is to stimulate oxidation in a patient who is unfit for exercise. Secondary difficulties are the poor and sometimes depraved appetite, constipation, and lassitude of mind and body. The object of treatment is not merely the removal of symptoms which may be relatively slight, but the removal of a handicap to physical and mental development at a time when these should be most active.

General Measures.

It may be a difficult question to decide whether a chlorotic girl is to be encouraged to take active outdoor exercise or advised to give up the attempt. A useful working rule is to keep patients in bed as long as the hæmoglobin percentage is under 60.

Diet.—The diet requires supervision. Chlorotic girls often prefer sweets and starchy food, and do not ingest a sufficient quantity of meat. Some firmness may be required in meeting this difficulty. Digestive troubles may require attention. An alkaline mixture combined with a bitter is often useful. Constipation must be dealt with. The most useful remedies are aloin and cascara.

Drugs.

Iron should be given, and given largely. The forms which may be employed are discussed in the section on secondary anæmia. It should be persisted with till the hæmoglobin percentage has reached 80. It is very much easier to treat a first than a subsequent attack, and a thorough recovery is less likely to be followed by relapse. Arsenic should not be used as a matter of routine, but it is useful in those cases in which the number of red corpuscles is materially reduced. Sometimes benefit follows the administration of digitalis, and this drug may be tried in cases not responding readily to iron.

Prophylaxis.

A sufficient amount of exercise should be taken to promote oxidation and to stimulate the formation of hæmoglobin. Over-fatigue, exhaustion, and bad hygienic surroundings, which impair the activity of the bone-marrow, either directly or indirectly, by making active exercise uncongenial or impossible, should be avoided. The prophylactic use of iron is worse than useless. In all ordinary circumstances enough iron for requirements is ingested with the food and more is useless. The large doses recommended in chlorosis act as stimulants, which do no good when not required and lead to diminished efficiency should necessity for their use arise.

(*b*) SECONDARY ANÆMIA.

It may not be amiss to point out that before an attempt is made to treat anæmia it should be correctly diagnosed. Anæmia may be overlooked in persons who lead an outdoor life with weather-beaten faces. More frequently anæmia is diagnosed because of pallor. The pallor may be due to indoor life, aortic disease, or cardiac debility. The pallor that follows malaria is more often due to circulatory debility than to lack of hæmoglobin, although anæmia may be severe. It is therefore important to use instruments of precision before arriving at a diagnosis. The busy practitioner may plead lack of time to make blood counts, but it requires little time or technical skill to make a rough estimate of the hæmoglobin. It may be remarked in passing that the type, degree, and progress of anæmia can only be assessed with accuracy when full examinations are made. It is important that minor degrees of anæmia should not be allowed to obscure a more important condition. Such a case is the anæmic-looking girl with a tuberculous lung.

Causes.

It is important not only to diagnose anæmia, but to try to ascertain its cause. The most obvious is actual hæmorrhage, but if hæmorrhage is severe, its gravity is due to loss of fluid rather than to loss of hæmoglobin. The obvious indication is therefore to arrest the bleeding if possible and transfuse fluid. If the patient survives the initial loss of fluid he is still in danger from lack of blood, and the experience of the Great War proved that perfusion of blood is a more effective remedy that perfusion of saline solution. It is seldom that any of the blood diseases lead to massive bleeding. The hæmatologist is often asked to examine the blood to try to account for bleeding. The cause is generally to be found in such a condition as duodenal ulcer or uterine fibroid, and the anæmia is more commonly the result than the cause of the hæmorrhage. The bleeding of hæmophilia, purpura, and leukæmia is persistent rather than severe. It may be remarked that repeated hæmorrhages are specially dangerous. Occult bleeding should not be overlooked. Duodenal ulcer, intestinal worms, chronic dysentery, and piles deserve mention. Among other causes, bad feeding, poor digestion, sepsis or other toxæmia, albuminuria, and unhealthy surroundings are subjects for inquiry.

General Measures.

Granted that causal factors have been eliminated or mitigated, it is possible to treat a case of simple secondary anæmia after noting the patient's appearance, but it will add to the patient's advantage and the practitioner's interest if he will make an initial blood examination and repeat it at intervals of a fortnight. Patients with less than 60 per cent. of hæmoglobin should be kept in bed till that figure is reached. The diet should be light and nutritious. A little wine may be allowed as a stimulant to appetite, but the prescription is often more easily started than stopped. The old idea that red wines have any direct effect on hæmogenesis is fallacious.

Drugs.

Iron.—A depleted, overworked, or exhausted marrow can turn out red corpuscles faster than it can provide them with hæmoglobin. The expression of this is the low colour-index. Iron appears to act as a stimulus to the formation of hæmoglobin, and medicinal iron is not to be regarded so much a supply of iron as a stimulus to the utilisation of iron. It should be given in large, even massive doses if they are tolerated, and should be stopped as soon as the

* An article by Dr. Goodall on the Treatment of Pernicious Anæmia appeared in last week's issue of THE LANCET.

object of its administration has been attained. Blaud's pill capsules in doses of 10 gr., thrice daily, are very useful. The tincture of perchloride of iron is very efficacious, but not always tolerated by the stomach. Reduced iron when free from sulphur is excellent and the dose is small. The scale preparations contain too little iron to be of much use. Various forms of organic iron have been recommended, but no manufacturer has yet succeeded in inventing a sufficiently arresting name for his preparation to bring it into general use by a scientific profession. The products of hæmoglobin we have found useless. Some of the others are moderately useful, especially in cases with dyspeptic symptoms, but none are so good as the inorganic salts when they are tolerated. Hypodermic injections of iron have no special advantage.

Arsenic.—Arsenic is often a useful adjuvant to iron. It is of special value when the number of corpuscles is low, and also in cases where the colour-index is high or tending to rise. Only small doses are required. The liq. arsenici hydrochlor. can be given with iron. Tablets containing Blaud's pill and arsenic are convenient.

Other Measures.

Circulatory stimulants sometimes seem to start a patient on the path to recovery. Horse serum may be tried hypodermically, or in doses of 10 c.cm. by the mouth. As was pointed out in considering this agent in the article on the treatment of pernicious anæmia, the patient should not be informed of the contents of the medicine if given orally or nausea may result. Sunlight, exercise, and massage are all desirable. Transfusion is not likely to be required in simple secondary anæmia. In post-hæmorrhagic cases it may be required. A hæmoglobin percentage of less than 15, a low blood pressure, and the availability of a suitable donor would be important factors in determining the operation.

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Special Articles.

MEDICAL FACULTY OF EDINBURGH UNIVERSITY.

BICENTENARY CELEBRATIONS.

THE celebration of the bicentenary of the foundation of the Medical Faculty of Edinburgh University took place on June 10th and 11th. The proceedings opened with the University dinner, which was held in the upper library of the old college on June 10th. Upwards of 200 members and guests attended. Sir Alfred Ewing, Principal and Vice-Chancellor of the University, was in the chair. After the toast of the King, the Chairman proposed the Guests in a speech which was certainly not the least happy of the many he was called upon to deliver during the celebrations. It was responded to by Prof. van der Hoeve, Dean of the Faculty of Medicine, University of Leyden; Dr. O. Robert Vaudescal, of the Faculty of Medicine of the University of Paris; Prof. Sir Humphry Rolleston, representing Cambridge University; and an old Edinburgh graduate, Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine. The toast of the Edinburgh School of Medicine was proposed by Prof. Sir Archibald Garrod, representing the University of Oxford, and was replied to by the Dean of the Faculty of Medicine (Prof. Lorrain Smith), the President of the Royal College of Physicians of Edinburgh (Prof. G. M. Robertson), and the President of the Royal College of Surgeons of Edinburgh (Mr. Logan Turner). Sir John Rose Bradford, President of the Royal College of Physicians of London, proposed the health of the Chairman.

On Friday, June 11th, the Honorary Graduation took place in the McEwan Hall at 10.30 A.M., the proceedings having been opened with prayer by Prof. W. P. Paterson, D.D., LL.D. The Vice-Chancellor welcomed the 39 representatives of the universities and medical schools of Great Britain and Ireland, Copenhagen, Leyden, Manitoba, Oslo, Paris, Pennsylvania, Saskatchewan, Stockholm, and Toronto, who had assembled to do honour to the great Edinburgh school. The delegates greeted the Vice-Chancellor and presented their addresses. The Dean of the Faculty of Law, Prof. James Mackintosh, presented for the honorary degree of doctor of laws ten graduates of the University of Edinburgh who had, as he said, a common background of experience and tradition, all having been reared in the same medical faculty. In introducing them individually he spoke of the several ways in which each had brought credit to the school. The names of the honorary graduates are Dr. Andrew Balfour, Director of the London School of Hygiene and Tropical Medicine; Prof. R. Howden, Durham University; Prof. William A. Jolly, Cape Town University; Sir George Newman, Chief Medical Officer of the Ministry of Health, London; Prof. A. Primrose, University of Toronto; Prof. Sir John Robertson, University of Birmingham; Prof. Ralph Stockman, University of Glasgow; Mr. Logan Turner, President of the Royal College of Surgeons of Edinburgh; Sir Norman Walker, University of Edinburgh; and Prof. James T. Wilson, University of Cambridge.

After the ceremony Sir George Newman delivered an address on the history of mediæval medical schools, noting the revival of the Hippocratic tradition, and the rising fame of Leyden in the seventeenth and early eighteenth centuries. He traced the influence of Leyden on the development of the medical faculty of Edinburgh, congratulated the faculty on its past achievements, and predicted for it an equally brilliant future.

A short but impressive service held at St. Giles' Cathedral was made memorable to those attending by the beautiful rendering of the anthem ("God be in my head") by Walford Davies.

Luncheon followed in the Royal College of Surgeons of Edinburgh. Mr. Logan Turner presided, Mr. Alexander Miles acting as croupier. The loyal toasts having been honoured, the President proposed the Guests, Prof. T. Gillman Moorhead responding.

In the afternoon Sir John Gilmour, Secretary for Scotland, opened the reconstructed department of surgery, an account of which was given in last week's LANCET. The Principal of the University said that the appointment of a zealous young man to the chair of surgery had carried with it the obligation to try to meet his enthusiasm by giving him opportunities as regards time and space to organise surgical teaching and research. This obligation the Rockefeller Foundation had enabled them to fulfil, and the new surgical block was, he believed, unrivalled in the world. Sir John Gilmour spoke of the foresight and knowledge which had enabled the building to materialise, and expressed his gratification at being asked to open it. Prof. D. P. D. Wilkie, in moving a vote of thanks, said that unlike those in administrative control of certain other bodies of workers, his difficulty was not to exact certain hours of toil but to procure keys in sufficient numbers that any worker might be able to get access to the building to pursue his researches at any hour of the night. Workers in this department would include both intramural and extramural teachers. Indeed, the institute knew no wall but one—the wall of ignorance; breaches in this wall could be made only by continued and coöperative effort.

The delegates were entertained to dinner by the Royal College of Physicians of Edinburgh, Prof. G. M. Robertson, the President, taking the chair. Toasts

included the town, to which the Lord Provost replied: the Faculty of Medicine, proposed by Prof. Tait Mackenzie, the Dean responding, and the President, proposed by Sir Alfred Ewing. A civic reception given by the Lord Provost, magistrates, and council concluded the celebrations.

The smoothness and dignity with which all the ceremonies were carried out under the wise guidance of Sir Alfred Ewing, Principal and Vice-Chancellor, impressed all the delegates, especially perhaps those representing less venerable institutions. They left Edinburgh heartened and stimulated by the signs of the deep influence that a big flourishing university can, in the course of time, exert on the life of a whole people.

MEDICINE AND THE LAW.

New Dangerous Drugs Regulations.

THE Home Office has given notice of its intention to amend the Dangerous Drugs Regulations in various important particulars, mainly in order to carry out recommendations in the report (issued last February) by the Ministry of Health Committee on Morphine and Heroin Addiction. Perhaps the most striking proposal is that of setting up a tribunal of three medical practitioners, assisted by a legal assessor, to decide charges of improper supply or possession of drugs against a doctor. At present the Home Secretary can, in cases of irregularity, withdraw a doctor's general authority to supply and possess, but he cannot do so until he has prosecuted the doctor under the Dangerous Drugs Acts and has obtained a conviction. As the Committee's report observed, when it is clear that in the interests of the public a doctor should lose his authority, it is undesirable that the Home Secretary should be obliged to chase him into the police-court to get a conviction. The mere withdrawal of the authority is often the appropriate penalty without the fines or imprisonment which a magistrate may inflict. Moreover, the issue in these cases is essentially medical—namely, whether the administration of the particular drug was or was not justified. It is therefore proposed to alter the regulations so that, if there is reason to think that a doctor is supplying, administering, or prescribing a dangerous drug to or for himself or anybody else otherwise than as required for the purposes of medical treatment, the Home Office shall be able to refer the case to the new tribunal. If the tribunal so recommends, the Home Secretary may, by notification in the *Gazette*, withdraw the doctor's authorisation and may exclude him from the benefit of the exception in Regulation 4 which allows the dispensing of drugs by doctors, dentists, and veterinary surgeons to be exempted from the general prohibition on supplying and procuring dangerous drugs. If the practitioner is thus excluded from the protection of Regulation 4, then he is definitely forbidden to give any prescription for the supply of such drugs. Regulation 5, which deals with the giving of prescriptions, is also to be amended. At present prescriptions must be in writing, signed and dated, &c., and must specify "the total amount of the drug to be supplied on the prescription." These latter words are to be elaborated into "the total amount of the morphine, cocaine, ecgonine, or diamorphine or any salt thereof to be supplied on the prescription, except that in the case of a preparation which is contained in the British Pharmacopœia, the British Pharmaceutical Codex, or the Drug Tariff issued by the Minister of Health for national health insurance purposes and which is not combined with any other preparation of any of the drugs not so contained, it shall be sufficient to state the amount of the preparation so contained." It is also proposed to add that a practitioner shall give a prescription only when required for purposes of medical treatment.

The Ministry of Health Committee devoted attention to the possibility of detecting cases where a patient obtains the drug of addiction from two or more doctors concurrently. With this object in view the Home Office proposes to amend Regulation 7. That regulation sets out the occasions when possession is not illegal. One of those occasions is when the possessor proves that the drug was supplied for his use by a medical practitioner or on and in accordance with a lawful prescription. The amendment proposed is apparently—for its language is not very clear—the removal of this protection for the possessor if he is under treatment from a doctor for addiction to any of the drugs or otherwise and is being supplied by a second practitioner and does not disclose the fact. Another change is to cause all doctors, dentists, and veterinary surgeons, if not already obliged to do so under Regulation 9, to enter in a separate register, in the case of each supply, purchase, or other obtaining of drugs, particulars of the date of receipt of supply, the name and address of the person, body, or firm from whom it is obtained, the amount obtained, and the form in which it is obtained. This will remove a doubt which has been expressed in certain recent prosecutions. A final proposal is that everyone authorised under Regulation 10 to carry on the business of manufacturing, selling, or distributing the drugs must keep them in a locked receptacle of which he himself or a qualified assistant holds the key.

It will be understood that these proposals are not yet law. The Home Office at this stage merely gives 40 days' notice (under the Rules Publication Act) of its intention to make these amendments. It has a statutory duty to consider any objections offered to the proposals, but is not obliged at the end of the 40 days to make the amendments, if there have been no objections, in the same terms as those which it has now advertised. The proposals appear to be a reasonable endeavour to implement the Committee's recommendations, though it remains to be seen whether they will work successfully.

Suicide as Murder.

Last March a man who had been "keeping company" with a girl of 18 bought a small bottle of "lysol" disinfectant, apparently with the object that the pair should poison themselves and die together. Next day he and the girl drank the bottle. The girl died in hospital but the man recovered. He was tried at Liverpool Assizes on a charge of murdering her. As is stated in Stephen's Digest of the Criminal Law, "a person who kills himself in a manner which in the case of another person would amount to murder, is guilty of murder." It is further the law that, if A aids, abets, or counsels B to kill himself, A may be tried for murder. This is the result of Section 1 of the Accessories and Abettors Act of 1861, which enacted that anyone who becomes an "accessory before the fact" to a felony may be tried and punished in all respects as if he were a principal felon. At the trial at Liverpool the man was convicted; he applied to the Court of Criminal Appeal for leave to appeal against conviction. The ground of the application was that the judge directed the jury inaccurately upon the law of "suicide pacts." The judge had apparently stated that, if two mutually agree to commit suicide and accordingly take poison and one of the two dies, the survivor is guilty of murder. On behalf of the appellant it was objected that the statement was too sweeping; the survivor might have been forced into the suicide pact; the appellant, it was said, acted under the influence of the girl. The Court dismissed the application. The Lord Chief Justice observed that the man was with the girl at the critical moment; it was he who had purchased the poison; he had aided and abetted her. It was impossible to say that the summing-up was inadequate.

If the suicide pact were between husband and wife and the wife survived, she would, it seems, be technically guilty of murder. The Criminal Justice Act of 1925 (by a section which came into force on June 1st) abolished the old presumption that an offence

committed by a wife in the presence of her husband was committed under coercion. The section adds, it is true, that actual proof that the husband was present and did in fact coerce his wife shall be a good defence on a charge against the wife, but this concession does not apply to offences amounting to murder. The new Act also alters the law of suicide by giving power to magistrates to dispose summarily of cases of attempted suicide instead of sending them necessarily for trial on indictment before a higher court. The new method (already applied in the first week of June to the case of a domestic servant who had taken poison apparently on being reprimanded by her mistress) is merciful and speedy and avoids unnecessary expense and publicity.

Duties on Obsolete Specifics.

Year after year Parliament imposes excise duties upon a remarkable list of some 500 proprietary medicines and specifics more than a century old. The list begins with "Adam's Solvent" and ends with "Zimmerman's Stimulating Fluid." Already at the end of the seventeenth century the proprietors did not disdain alliteration's artful aid. There are pills, pastes and powders, drops, lotions, salves and essences whereof the very names breathe the atmosphere of romance or the suggestion of salvation "Birt's Martial Balsam," "Bourne's Ethereal Essence," "Hayward's Samaritan Water," "Ormskirk Medicine for the Bite of a Mad Dog"—the curious will find them all in the schedule to the Medicines Stamp Act of 1812. The list had been varied or re-enacted in 1802 and 1804, to go no further back into the mists of antiquity; but since 1812 there seems to have been no change. There the schedule remains upon the statute book by virtue of a few words in the annual Finance Act continuing the medicine duties as before. A year ago in the discussion upon the Finance Bill Captain Wedgwood Benn appealed to the Treasury to codify the Acts upon this subject so as to save the taxpayer the labour of antiquarian research. A sympathetic answer was given but nothing was done. Recently, on June 7th, Captain Benn renewed his appeal. In reply Mr. Ronald McNeill, the Financial Secretary to the Treasury, admitted that a drastic revision of the Acts was necessary. He added that it was intended in the near future to assemble an inter-departmental committee to examine the superfluity of ancient and obsolete enactments containing the specifics which are liable to medicine duty. He was able to instance the "Elixir of Longevity or Swedish Preservative," which is still mentioned in the statute book, but which, though it may have been the cause of longevity in others, has not managed to preserve itself. The suggested reform is overdue. If such a list is necessary, machinery should be created for its revision from time to time with expert assistance. Were a list of 500 contemporary specifics to be compiled to-day from among our proprietary remedies how would it strike a reader in the middle of the next century?

PUERPERAL INFECTION AND A NURSE.—At an inquest held on June 8th by Dr. M. H. Taylor, the Kingston coroner, on the body of a woman 33 years of age, death was recorded as due to puerperal septicæmia. The coroner stated that during the last six months he had held inquiries into the death of seven women from puerperal septicæmia who had been patients in the nursing home or attended by nurses of the Kingston Nursing Association. All the cases he had investigated, he said, had followed each other in such a way that there was no doubt that the infection was carried to the patients by the same nurse. He is reported to have added his opinion that 24 hours' quarantine was not sufficient in a case in which a nurse had been in contact with puerperal septicæmia. The Nursing Association's solicitor stated that the Ministry of Health had been approached with a view to an inquiry into the cases.

Public Health Services.

RANGE OF MEDICAL SERVICE UNDER THE N.H.I. ACTS: TREATMENT BY CARBON DIOXIDE SNOW.

THE Medical Benefit Regulations define the range of medical service under the National Health Insurance Acts. The practitioner, they declare, is required to give his panel patients treatment comprising "all proper and necessary medical services other than those involving the application of special skill and experience of a degree or kind which general practitioners as a class cannot reasonably be expected to possess." A question recently arose in Kent whether treatment of a verrucous condition of the sole of the foot near the first interdigital space by means of freezing with CO_2 snow was within the range of medical service. The Minister of Health, acting under Article 38 (4) of the Medical Benefit Regulations, remitted the question to referees, and the referees have answered it in the affirmative. The judgment of the referees states that the case was not urgent except that the verrucous condition was causing pain and lameness. The question was whether the process of packing the snow into the form of a "pencil" and its local application for cauterisation called for special skill or not. The Ministry contended that the skill required was no more than that involved in applying other forms of cautery—nitric acid, caustic, or electrolysis. No special training seemed necessary. Of the witnesses who supported the view of the Ministry Dr. H. B. Brackenbury and Dr. S. C. Pritchard had seen it applied once before they used it themselves; Dr. E. W. Adams had merely relied upon a friend's description, and Dr. Adam Fulton upon a reference in a medical journal and upon the printed instructions. Dr. Gordon Ward, who appeared for the Local Medical Committee, submitted the contrary view. He called no witnesses but argued that the treatment did require special skill in seeing that the "pencil" was well rammed and compact and that its size was properly adapted to the size of the lesion, and in the degree of pressure to be exercised (over a bone or otherwise), the length of time of application and the discretion as to repetition. He made the further points that, the treatment being alternative to other forms of cautery, there was no particular reason to expect a general practitioner to acquire the necessary technical knowledge of it, and that many practitioners would not have acquired such knowledge before becoming qualified since the treatment was not introduced into this country until 20 years ago. In deciding the issue whether a particular service is one which involves special skill and experience, the regulations direct that regard is to be had to the question whether the service is one which is or is not usually undertaken by general practitioners practising in the same area. Dr. Ward addressed a questionnaire to 371 panel doctors in Kent upon this point with the following result: 46 per cent. said they were acquainted with the technique of treatment by carbon dioxide snow; 24 per cent. said they employed the treatment among their patients; and 18 per cent. said they possessed the necessary apparatus. These statistics did not prevent the tribunal from being unanimous in holding the treatment to be within the "range of medical service" which presumably expands from time to time but never contracts. The two medical members of the tribunal were Dr. G. Collingwood Andrews and Dr. John F. Walker; the chairman was Mr. E. H. Tindal Atkinson, barrister-at-law.

SANITARY OFFICERS ORDER.

An Order issued by the Ministry of Health, which came into force on June 1st, reproduces in general the provisions of the Sanitary Officers Order of 1922, but prescribes some changes with regard to the qualifications of sanitary inspectors. For the future the certificates of the Royal Sanitary Institute or

of the Sanitary Inspectors Examination Joint Board will be required, subject to the rights of holders of other certificates. A veterinary surgeon may be appointed a sanitary inspector for (say) the inspection of meat only, but the Minister expresses his opinion that such veterinary surgeons should possess a diploma in veterinary State medicine or have had special experience in practical meat inspection. The Order deals with both qualifications and duties and applies to all medical officers of health and sanitary inspectors appointed in the administrative County of London, but outside London only to officers whose appointing authority desires to recover half the salary from the county council or the Exchequer. In the case of a medical officer of health, it is apparently open to the appointing authority to make an appointment not to the approval of the Ministry by forgoing the repayment of the half salary for three years, at the end of which time the medical officer, unqualified by a diploma in public health, will have acquired a qualification by three years' service. There is general agreement that medical officers of health should be independent of the conflicting ties of private practice. Whole-time appointments can be readily secured by combining small districts or by adopting the Hampshire scheme of appointing county assistants to be local medical officers of health, or the Essex scheme of appointing local medical officers of health to carry out the county health services for their own district. The advantage of appointing whole-time veterinary surgeons, free of the ties and obligations of private practice, to carry out the provisions of the new Milk Act is also quite clear. If new legislation is needed to secure that all sanitary officers shall in future be fully trained for their work and devote their whole time to it, the sooner it is passed the better.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1925 of a group of districts of varying status. The death-rate from heart disease is stated separately, because of its direct bearing on the prevention of rheumatism in childhood, which is becoming a definite feature in the programme of up-to-date sanitary authorities.

Name of district.	Estimated mid-year population (R.-G.).	Birth-rate.	Death-rates per 1000 of the population.					Death-rates per 1000 births.	
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Heart disease.	Infant mortality.	Maternal mort. from childbirth.
Wiltshire C. ..	295,800	16·7	11·2	0·68	1·60	1·6	1·8	53	3·3
Reading C.B...	93,670	16·1	11·1	0·92	1·28	1·6	1·5	56	4·6
Barnstaple R.D.	18,490	14·6	12·8	0·65	1·51	1·4	1·8	66	0·0
Bridgwater B..	16,410	17·8	13·9	0·91	1·64	3·4	1·7	82	6·8
Bognor U.D. ..	12,800	13·6	9·1	0·39	1·10	1·5	1·7	34	11·5
Chingford U.D.	10,310	15·6	8·3	0·30	—*	—*	—*	43	0·0
Stowmarket U.D.. ..	4,250	17·6	16·0	1·17	1·88	5·2	0·94	40	0·0

C. = County. C.B. = County borough. B. = Borough.
U.D. = Urban district. R.D. = Rural district.
—* = Information not in report.

Wiltshire.

Dr. Claude E. Tangye tells us that social conditions and occupations are on the whole favourable to public health, and that, with the exception of Swindon, there is no approximation to the conditions of the manufacturing areas of the north. Urban districts retain the character of country towns. Three diseases show special incidence, rheumatoid arthritis amongst farm workers, goitre amongst school-children, and pulmonary tuberculosis amongst factory workers. Overcrowding is still common, but deaths from infantile diarrhœa are comparatively few.

A considerable proportion of the metropolitan milk-supply is produced in this county, so that recent legislation considerably affects administrative activity. Prior to the end of 1925, five notices were received from the L.C.C. under Section 4 of the new Milk Act. There was difficulty in tracing the sources of infection, but ultimately, early in 1926, cows had been found giving tuberculous milk on four out of five farms reported, and in the fifth case the cow had probably been slaughtered before the receipt of the report. At first work under this Act was carried out by the veterinary surgeons appointed under the Diseases of Animals Acts, but now the county council has decided to appoint a veterinary surgeon for the Milk Act to serve the whole of the county, other than the area of his private practice. The Agricultural Committee of the county council granted three "Grade A" licences to producers during 1925, whilst the Ministry have granted two "Certified" and seven "Grade A (tuberculin-tested)" licences in the county. Dr. Tangye has no information as to "Pasteurised" licences, which are in the hands of the local sanitary authorities. The administration of the Meat Regulations, 1924, is fairly good in some towns and very lax in others. Producers with live-stock for disposal prefer the laxer districts. Dr. Tangye thinks sanction to the appointment of meat inspectors should be conditional on their holding proper qualifications. The Public Health Committee offered to provide free tuition in meat inspection at Bristol. Sixteen of the 35 inspectors were allowed to attend by their authorities, who paid their travelling expenses. Of the 16, six sat for the Meat Certificate of the Sanitary Institute and five obtained this qualification. Nine of the 35 inspectors now hold a qualification.

During the last five years five local authorities have installed modern bacterial sewage works and two more new schemes are in hand. In addition, three authorities have completed extensive alterations and improvements. The towns of Wiltshire have good water-supplies, but many of the villages "are dependent upon wells which have become hopelessly polluted, and others are dependent upon rain water only." During each of the last two years 12 cases of encephalitis lethargica have been notified and last year seven deaths resulted. The county laboratory has now been dismantled and bacteriological work for the county council is carried out at the Salisbury General Infirmary and the Royal United Hospital, Bath. Certified midwives attended 67·6 per cent. of the births in the county as compared with 66 per cent. during 1924. Dr. Tangye reports a remarkable decrease in "unqualified" midwifery practice.

Reading.

Dr. H. J. Milligan's report is cheerful. The local occupations are not injurious to health. Infant mortality is lower than in most centres, although a little up in 1925 owing to whooping-cough. Health services are in a satisfactory state. An extension of the infectious hospital to provide 26 beds is in progress. There is provision for nearly every case of tuberculosis, usually without delay, the only want being accommodation for advanced female cases. Centres for maternity and child welfare work are established in every quarter, capable of meeting all demands. The municipal maternity home (13 beds) is to be improved by the provision of additional accommodation for staff and for isolation. The work of the antenatal clinic does not show a progressive ncrease, the new patients for 1925 (245) being two less than in 1921, 1923 being the "peak" year with 283 cases. Dr. Milligan's comment is that the mid-wives of the town ought to take more advantage of this clinic. The shortage of houses is still acute. At the time of the Census 2000 houses were occupied

by more than one family and it is doubtful if the number has been much reduced since.

The large percentage of tuberculous milks found during the year is "a further argument for the use of designated milk from tubercle-free herds." Out of 35 samples examined six were found to contain living tubercle bacilli. The positive results affected five herds. In four cases the offending animal was found and slaughtered, and in the case of the fifth herd old beasts had been sold for slaughter after the taking of the sample. In 1925 the death-rate from tuberculosis reached a lower point than ever before, and Dr. Milligan is of opinion that the pavilion for the reception of advanced male cases is of special value. The water-supply is derived from the Kennet. The river water first undergoes coarse filtration and then fine filtration and chlorination to the extent of ½ to 1 part per million. Regular bacteriological examination shows that *Bacillus coli* is constantly absent in 100 c.cm. of the filtered water.

Practically the whole area is sewered on the separate system. Up to 1925 the sewage was pumped on to Manor Farm and distributed by broad irrigation, but the effluent discharged into the Kennet was not satisfactory. During 1925 an activated sludge installation was completed, but it is as yet too early to express a final judgment on the efficiency of the new scheme. The Education Committee has under consideration the extension of facilities for dental treatment and the provision of more commodious premises for the school medical department. Good results are still reported from ionic medication of ear discharges.

Barnstaple.

Dr. J. R. Harper says a further improvement in the general health of the rural district and a more rapid diminution of tuberculosis is assured when the old cottage property has been replaced by modern and sanitary dwellings. The North Devon Infirmary, a modern hospital with an up-to-date X ray plant, is to open a maternity department within a few weeks. There is no hospital for infectious diseases, but the county council makes provision for small-pox. The Combe Martin water-supply problem has not yet been solved and is an urgent matter in view of the summer influx of visitors. The Woolacombe sewerage system has broken down several times during the year. The outfall becomes blocked and the sewer joints are forced. The sewer is privately owned. In August there was an outbreak of food-poisoning in a boarding house in Countisbury, affecting 35 persons and causing one death. The origin was traced to meat infected with *Bacillus aertrycke*, and after the lapse of three weeks a second outbreak affecting four persons was proved to be due to a member of the staff who had recovered but was a carrier of this bacillus.

Bridgwater.

Housing is the subject of paramount importance in this ancient borough, the charter of which dates back to 1200, and Dr. G. W. Harvey Bird states that a programme of new buildings has been adopted and is being vigorously pushed forward by the council. A "great scheme" would be needed to deal with the narrow streets. Of the 24 infant deaths, which give an infant mortality-rate seven higher than that of England and Wales, 11 were due to congenital defects, eight to bronchitis and pneumonia, and two to whooping-cough. An effort has been made during the year to improve methods of milk production and distribution, but the council has had no applications for licences to produce designated milk. A demand for Grade A milk, distributed by a producer-retailer licensed by the Somerset County Council, is increasing, and this milk is supplied to the Isolation Hospital and the Baby Hospital.

Bognor.

Dr. T. Philips Cole has laid stress in his last two reports to his urban district council on the importance of antenatal clinics, but up to the present expectant mothers have not appreciated the advantages offered. The water-supply is from deep wells about four miles north of the town and the water company are laying an additional service main to meet growing requirements. The sewerage service will soon require extension. At present the sewage is pumped to storage tanks, from which it can be discharged from one hour before to five hours after high water without polluting the foreshore. The extension can be dealt with in three ways—viz., by increasing the tank capacity, by keeping out storm and surface water, or by creating new works at the western end of the district. Since 1920 progress has been made in housing and the types of house most needed—viz., four and five-roomed houses—have been provided. Dr. Cole deals with the milk question at length. The veterinary surgeon inspects farms outside the district by consent. Since the Tuberculosis Order came into force he has been able to report 14 tuberculous cows to the county council, most of them with udders affected and two markedly emaciated as well. Bognor had a sunshine record for 1925 of 1885·5 hours, and claims to have a high percentage of winter sunshine when compared with the leading winter health resorts.

Chingford.

Dr. Malcolm Barker mentions that a new sewage disposal scheme has been prepared by the urban district council and is under the consideration of the Ministry. This would take the place of the present sewage farm. The methods for disposing of refuse also have to be considered, owing to the rapid growth of Chingford. Between May 18th and June 30th a veterinary surgeon examined the 194 cows in the district. He took 23 samples of milk from individual cows with suspicious symptoms and 16 samples of mixed milk. The bacteriologist reported an excess of pus cells from nine cows, and five cows were removed from the milking herds. No tubercle bacilli were found in any of the samples, but no mention is made of the employment of the biological test or when the examination is to be repeated.

Stowmarket.

Dr. S. C. Hounsfield says housing is the main urgent matter which requires immediate attention in this urban district. "Nearly all our cases of tuberculosis occur in these overcrowded, damp, or badly lighted and badly ventilated houses." Influenza and measles beginning in February, and the severe weather with more influenza in November, accounted for the very high death-rate from all causes and from diseases of the respiratory system.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 5TH, 1926.

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 219 (last week 193); scarlet fever, 1236; diphtheria, 749; enteric fever, 58; pneumonia, 1011; puerperal fever, 52; cerebro-spinal fever, 8; acute poliomyelitis, 2; acute polio-encephalitis, 1; encephalitis lethargica, 44; continued fever, 1; dysentery, 3; ophthalmia neonatorum, 122. There were no cases of cholera, plague, or typhus fever notified during the week.

Deaths.—In the aggregate of great towns, including London, there were 4 (0) deaths from enteric fever, 35 (8) from measles, 7 (2) from scarlet fever, 27 (2) from whooping-cough, 25 (8) from diphtheria, 46 (11) from diarrhœa and enteritis under 2 years of age, and 80 (9) from influenza. The figures in parentheses are those for London itself.

SMALL-POX IN BLACKBURN.—Two cases of small-pox were discovered in the Blackburn Poor-law Institution on June 7th, and further two cases on June 8th. Dr. O. M. Holden, medical officer of health for Blackburn, informs us (June 12th) that no more cases had as yet arisen in the Institution and no cases had occurred in the town. The notified cases were immediately removed to the small-pox hospital, all contacts were vaccinated to the number of over 500, and the Institution was closed to visitors. Daily inspection of all common lodging-houses in the town was initiated, and also a daily inspection of the houses of all residents who were in any way connected with the Institution. The source of the infection, Dr. Holden adds, has not been discovered, but it is suspected that it was brought in from an infected area by some casual, as all four cases had been inmates for several months.

PHARMACEUTICAL SOCIETY OF GREAT BRITAIN.

OPENING OF NEW PHARMACOLOGICAL LABORATORIES.

ON June 16th the new pharmacological laboratories at 17, Bloomsbury-square, London, W.C., were opened by the Minister of Health.

The laboratories comprise four large and well-lighted rooms above the Examination Hall of the Pharmaceutical Society; additional rooms will become available as the laboratories develop. One room is at present used for the testing of the heart stimulants—digitalis, strophanthus and squill—and for research work. The next room contains, among other apparatus, that needed for testing the strength of pituitary extract and of the various preparations of ergot. A third room will be utilised if it is decided to add a vitamin-testing department to the laboratories. The remaining space is devoted to the housing of experimental animals in bright and hygienic surroundings.

The History of the Laboratories.

The introduction of the Therapeutic Substances Bill into the House of Lords in 1924 indicated that there was a likelihood of standards being fixed for a number of therapeutic substances which could only be standardised by biological means and for which there were no standards in the British Pharmacopœia. The Council of the Society saw that the Bill opened up a field of work in which the Society might usefully participate, and decided to explore the possibility of equipping a laboratory in which some at least of the testing contemplated in the Bill might be carried out. The Ministry of Health and the Medical Research Council approved this project, and an Advisory Committee was constituted, including representatives of the Council and the Science Committee, the General Medical Council, the Medical Research Council, and the British Medical Association. Upon the recommendation of this Committee, the Council appointed as director Dr. J. H. Burn, of the Department of Biochemistry and Pharmacology of the National Institute for Medical Research, and the laboratories have been set up under his direction.

By the Therapeutic Substances Act (1925) any of the manufacturers who wish to prepare substances named in the Act must comply with certain regulations. The substances comprise (*a*) vaccines, sera, toxins, antitoxins, and antigens; (*b*) salvarsan and analogous substances; (*c*) insulin; (*d*) pituitary extract. Salvarsan can still only be manufactured under a licence from the German patentees. The patent rights, however, shortly come to an end. Similarly, insulin can only be made by those having a licence from the M.R.C. Pituitary extract may be manufactured without regard to patent rights. Arrangements are now complete for the testing of pituitary extract and of other substances considered by the Geneva Conference—namely, digitalis, strophanthus and squill, and ergot. It will be the aim of the laboratories to be able to accept for testing all substances which appear in the schedule of the Act, and in addition those which the progress of science indicates are likely to be included.

The laboratories were established with three primary objects: For research work upon the pharmacological testing of drugs, for training pharmacists in that work, and for the commercial testing of drugs for manufacturers. It will obviously be advantageous for manufacturers to take advantage of the facilities offered. The commercial value of a statement on the label of a preparation that it has been biologically tested by the Pharmaceutical Society of Great Britain, and has been found to correspond with a definite amount of a standard sample, does not need to be emphasised. The laboratories should be of value, in particular, to manufacturers who are unable to test their own products.

The Opening Ceremony.

The President of the Society, Mr. P. F. Rowsell, in introducing the Minister of Health, said that so far the Society and pharmacists generally had not taken any very active part in the pharmacological testing of drugs. It was fitting, however, that the Society should take its share in this latest branch of medical science, especially since, with the institution of the Degree in Pharmacy by the University of London, the possibility of pharmacists with these higher qualifications undertaking this work became more clear and defined. The Society was responsible for the training and examination of pharmacists; it had always been its aim to ensure that training should be progressive, and that pharmacists should keep abreast of the changes which took place from time to time in medicine. The Society had been fortunate in securing as director Dr. Burn, whose vast experience in this work at the National Institute of Medical Research had placed the laboratories already in a position to test five classes of preparations.

Dr. Burn said that the service which the laboratories hoped to give would be based principally on the regulations of the Therapeutic Substances Act, in order that manufacturers might successfully comply with those regulations. The laboratories' smoothness of working was also closely connected with the Conference held at Geneva last year under the League of Nations. From time to time some manufacturing pharmacists had criticised biological testing as unreliable. The Geneva Conference had ended the state of affairs which justified such criticism. The guiding principle had been adopted of stating the result of a test on a sample in terms of the effect produced by a standard, and no longer in terms of the reaction of biological material. Dr. Burn referred to the great part which Dr. H. H. Dale had played in the recent progress in biological assay. The Geneva Conference might properly be described as Dr. Dale's Locarno, since a body of internationally renowned scientific men might be just as intractable as a similar body of diplomatists. Criticism of biological assay had also been made by some medical men, who asserted that there was no evidence that the properties measured in the laboratory are identical with those required by the clinic. Work directed by Dr. Dale had produced a brilliant answer to the criticism in the case of both neo-salvarsan and of insulin. It had been shown beyond question for these agents that the laboratory test for potency was also a measure of the value to the patient. Dr. Burn expressed his hope that research would be the most important side of the laboratories' activities, since the imagination, the perseverance, and the enthusiasm inspired by research were of the greatest value in securing accurate biological assay.

Mr. Neville Chamberlain, Minister of Health, then declared the laboratories open.

IRELAND.

(FROM OUR OWN CORRESPONDENT.)

Annual Meeting of the Irish Medical Association.

THE annual general meeting of the Irish Medical Association was held in the Royal College of Surgeons, Dublin, on June 9th, Dr. F. C. Purser, the President, in the chair. The Council had referred to the meeting a letter from the Irish Committee of the British Medical Association in which information was asked as to the present attitude of the Irish Medical Association towards it. The Irish Committee of the British Medical Association did not dispute the right of the Irish Medical Association to sever its connexion with the Irish Medical Committee, or to refuse to accept the resolutions of meetings of delegates, but it felt that it was due to the Irish branch of the British Medical Association, which possessed the

largest membership of any medical association in Ireland, and in the Free State, that it should be informed formally of the decisions of the Irish Medical Association, so that it might, in the circumstances, be in a position to seek independent representation.

Senator W. O'Sullivan, Past President, proposed, and Dr. T. B. Costello seconded a resolution—

That, in matters in regard to legislation affecting the interests of the medical profession in Ireland, it is advisable that the opinion of the profession should be expressed by an organisation representative of the entire profession, and in present circumstances this can best be done by the Irish Medical Committee.

After considerable debate the President, on consulting the standing orders, ruled the resolution ultra vires. The annual report of the Council was then presented. It was stated that the membership at the end of last year was 431. The accounts showed a balance in hand of £610. The result of the annual election was declared, Dr. Purser being re-elected as President and Dr. H. T. Warnock as Vice-President. Several committees were elected and the meeting adjourned.

Dr. Purser, the President, in his address, spoke of several matters of medico-political interest which had been engaging the attention of the Association during the past year. He believed that the scheme for medical registration and control in the Saorstát would be found to satisfy most people. The Executive Council had given the representatives of the profession a very fair hearing. Ample opportunity had been given for expression of views on every aspect of the controversy and even minor details had been considered without haste or hurry. The details of the scheme were still private. The Bill giving the selection of candidates for Poor-law medical appointments to an Appointments Commission was of the utmost importance. It was welcomed by this Association, for not only did it strike a blow at corrupt practice in elections, but it put the assessing of merit into the hands of those best qualified to assess it. Further, it would be welcomed as a step towards a State medical service, as it removed the chief stumbling-block in the way—namely, patronage of local authorities. It was greatly to be regretted that the system of graded salaries had not been adopted in all counties. In co. Mayo, for instance, the salaries paid were much below the salaries in the neighbouring and equally poor county of Galway. Urgent representations had been made to the Minister for Local Government and Public Health in this matter, but so far he could not be induced to exercise pressure to remove this injustice.

The Local Authorities Bill.

The Local Authorities Bill passed the Dail last week without any serious modification, and it is not likely to be changed in the Senate. By this Bill all appointments (other than by promotion) under local authorities will be made on the recommendation of a special "Appointments Commission," who will, in all cases other than technical or professional appointments, make their selection by the method of competitive examination. A strong fight was made to carry an amendment to the effect that the Appointments Commission should send a short list of suitable candidates to each local authority, with whom the final selection would rest. This was defeated by a large majority.

Royal College of Surgeons in Ireland.

The annual elections of the Royal College of Surgeons in Ireland have resulted as follows:—President: Andrew Fullerton. Vice-President: Thomas E. Gordon. Secretary: Sir F. Conway Dwyer. Council: Sir Thomas Myles, Sir Arthur Chance, Sir Robert H. Woods, Richard Lane Joynt, Sir William Taylor, R. C. Butler Maunsell, Sir W. I. de C. Wheeler, Sir F. Conway Dwyer, Trevor N. Smith, Sir C. Arthur K. Ball, Louis A. Byrne, Seton Pringle, Edward Sheridan, Adams A. McConnell, R. Atkinson Stoney, William Pearson, George E. Pugin Meldon, Howard Stevenson, Sir William J. Smyly. The new President, Mr. Fullerton, is surgeon to the Royal Victoria Hospital, Belfast, and professor of surgery in Queen's University. He was consulting surgeon in the Boulogne area during the war, with the rank of colonel in the Army Medical Service, and received various decorations. This is the first time that a Belfast surgeon has been elected to the Presidency of the College, and the first time for many years that any provincial surgeon has received the honour. Mr. Gordon, the new Vice-President, is surgeon to the Adelaide Hospital, Dublin, and professor of surgery in Trinity College. Both Mr. Fullerton and Mr. Gordon were elected without opposition.

NATIONAL INSTITUTE FOR THE DEAF.

THE annual meeting of the National Institute for the Deaf was held at the Mansion House, by the kind permission of the Lord Mayor, on Friday, June 11th, when Lord Charnwood presided over a large gathering. The report was read by the secretary of the Institute, Mr. A. J. Story: it showed that since the brief period following upon recent reconstruction the work of the Institute had been successfully carried on and that large provinces of future endeavour had not only been outlined, but a promising commencement of activity had been made. The directions of the work as shown by the report included coöperation with the necessary authorities in securing the expert medical attention and advice necessary to obviate improper classification of deaf subjects as mentally unsound, and especially for the inquiry into the condition of deaf children who are too often believed on account of their physical defect to be mentally deficient and so wrongly categorised. The report also showed the many directions in which deaf subjects, if educated, could be employed to their own advantage and that of the community, and disclosed the need for public pecuniary support.

Lord Charnwood, in moving the adoption of the Report and Accounts, emphasised the fact that the Institute was the only body attempting to coördinate and correlate the work of the many institutes, agencies, and centres that had been started, mostly of recent date, to improve the welfare of the deaf, to educate them so that the one barrier between them and their fellow citizens should be at least partially thrown down, and to secure for the many competent deaf people employment despite their disability, which in so many cases should not really be considered a handicap.

The adoption of the report was seconded by Sir Squire Sprigge, who analysed the reasons why the deaf population did not secure the proper amount of public sympathy. He pointed out that medicine was now having considerable success in the prevention of deafness by the early and appropriate treatment of the sequelæ of infectious diseases, and he believed that the medical profession would welcome the opportunities offered to associate themselves with the work of the Institute, especially in the task of inspection, so as to guard against wrongful diagnoses among the sane of mental abnormality.

The adoption of the report having been unanimously carried, the Duchess of Atholl proposed:

"That this meeting, interested in the welfare of the deaf, desires to call attention to the many and severe handicaps in the lives of those who suffer from deafness; and earnestly commends the work of the National Institute for the Deaf and that carried on by local societies for the deaf in some 70 districts of the United Kingdom to public sympathy and support."

She outlined the claims for public sympathy with the deaf, and speaking from experience at the Board of Education, she reminded the meeting how much good had been done by the treatment of early ear troubles, and, therefore, in the prevention of deafness, through the systematic attention to the ears of the school population.

The resolution was seconded by the Dean of Westminster and was unanimously agreed to.

A resolution was then proposed by Lady Robson as follows:

"That whereas deafness overtakes large numbers of persons in adult life with the result that many of them become deprived of their employment, this meeting begs employers to consider whether by adjustments of staff they can retain such persons in their service and thus prevent the addition of the burden of idleness and want to the already heavy burden of deafness."

This, which was seconded by Sir Harry Stephen, was also agreed to unanimously, and the meeting closed with a vote of thanks to the chairman.

Correspondence.

"Audi alteram partem."

THE QUESTION OF SPECIAL DIPLOMAS.

To the Editor of THE LANCET.

SIR,—From time to time vacancies are advertised in the columns of the medical journals, one of the conditions of candidature being the holding of one of the special diplomas. We learn that the D.P.H. is an extremely useful additional qualification, the possession of which is indispensable to those who wish to become school medical officers or medical officers of health. The D.T.M. is almost compulsory to would-be officials of the Colonial Medical Services or workers in the tropics, special pay being promised to the holders of this extra qualification in many cases; and it is useless to try for any tea- or rubber-estate appointment without it. The possessors of the D.M.R.E. hold the fort as regards vacancies on the electro-therapeutic or radiological staffs of our large hospitals and institutions, and the D.P.M. has become the sine qua non for all who propose to specialise in mental or nervous diseases and whose intention it is to get on the staffs of our large asylums. Diplomas in tuberculosis diseases—i.e., D.T.D.—are now expected of tuberculosis officers, and further special courses and qualifications are now being advanced for bacteriology and every other side line in medicine and surgery.

The question now arises—why are these demands being made? The answer is surely, that the holders of these special diplomas are recognised by the various authorities as being more highly qualified or specialised to hold certain posts than could be those medical men who are not so trained. This being a fact, how is it that these qualifications with one exception—i.e., the D.P.H.—are not registrable. It does not appear that those responsible for this oversight quite realise that it not only takes time and money, but an intensive training and stiff examinations before these diplomas are obtained, and that they are only granted by recognised examining boards and universities. Why, then, should these diplomas remain officially unrecognised? Who is responsible? What antiquated machinery refuses to move? It is quite time that all qualifications legally gained by hard preparation and after due examination should be registrable as "extra qualifications," providing the holders are already qualified to be admitted to the Medical Register.

I do not know of any actual hardship which has accrued to the holders of these special diplomas on application for posts owing to the fact that special diplomas cannot be registered, but it is clear that serious inconvenience may arise and probably has arisen. For example, a medical man when travelling applies for a vacancy and his personal statement of possessing a diploma is rightly not accepted, yet no one usually carries his diplomas about with him. The possession of a non-registrable special diploma may be supported by an entry in the Medical Directory, but absence of its registration in the Medical Register, the official roll of the profession, might make it necessary for an applicant to prove his identification and statements. Employers recognising the value of these special qualifications often demand them, even when not obliged to do so by the rules which govern the appointments, and are put to extra trouble and correspondence to ascertain that an applicant has the special training required, and this only because he is not registered as holding some diploma which he claims to possess.

I can quite understand that new legislation is necessary to set this matter right, and it seems to me that the initiative might well come from the statutory bodies which grant the diplomas. A few weeks ago the Society of Apothecaries was told that the right to grant a registrable diploma in midwifery could only be acquired by legislation, so that the situation should be clear to all the statutory bodies. There is also support for the reform to be found in the fact that degrees taken in special branches of medicine—i.e., M.D. (State Med.), M.D. (Trop. Med.), and M.D. (Psych. Med.)—are registered; if the degrees why not the diplomas?

I am, Sir, yours faithfully,

C. RUSSELL CORFIELD, M.D. Brux.,
L.M.S.S.A. Lond., D.T.M. Liverp.

Lincoln, June 14th, 1926.

*** We have reason to believe the General Medical Council is perfectly willing to register the special diplomas but little enthusiasm has been manifested by the statutory bodies issuing them to press for the new legislation which would be necessitated. The D.P.H. is registrable by the Council whose ruling on the cognate curriculum is therefore binding on the educational bodies concerned. Some of these might object to loss of autonomy in the matter of special diplomas at present non-registrable. In regard to these the Council as the authority on medical education may pass resolutions but the examining bodies are not bound by them.—ED. L.

X RAY TREATMENT OF CANCER.

To the Editor of THE LANCET.

SIR,—In the leading article on the X Ray Treatment of Cancer in THE LANCET of June 12th, you were kind enough to make some references to my recently published book on "Radiotherapy in Relation to General Medicine" (Oxford Medical Publications). One quotation is: "To British radiologists the treatment of carcinoma of the womb is of little practical importance, for they never see it." Your inadvertent omission of the word *early* before *carcinoma* (see p. 97) might perhaps lead readers to believe that radio-therapeutists in this country take no interest in uterine cancer. The contrary is the case. We do our best for the inoperable and the recurrent cases, of which, unfortunately, there is a plentiful supply. Control of pain and hæmorrhage is usually possible, and in some instances restoration to apparent health for a period measured in months and occasionally in years. I am, Sir, yours faithfully,

F. HERNAMAN-JOHNSON.

Harley-street, June 12th, 1926.

"TOXIC (SUBDURAL) MENINGEAL HÆMORRHAGE."

To the Editor of THE LANCET.

SIR,—We should like to thank Dr. C. P. Symonds for his comments in your issue of June 5th and to submit the following observations in reply:—

In the first place we agree that the term "sub-arachnoid" is a more correct anatomical description than "subdural." Dr. Symonds's suggestion that in one of our cases the blood came from a punctured vein has no application. All practitioners experienced in these matters will agree with us that there is no resemblance whatever between venous puncture blood and blood effusions such as the hæmorrhages we have described. We accept Dr. Symonds's evidence that a number of these hæmorrhages are due to aneurysm, but in our opinion the present state of our knowledge of the subject does not justify the assumption that all owe their origin to this condition. In our opinion the clinical histories of our cases and their response to treatment establish a strong argument in favour of a toxic origin. In our first case there were definite extra-meningeal signs of toxicity—viz., pleuro-pericardial friction and dilatation of the heart, which appear to us to be incompatible with a diagnosis of congenital aneurysm.

In the other two cases, cerebro-spinal fever was present in the area and the mode of commencement

in both cases justified a preliminary diagnosis of meningococcal meningitis. This disease is characterised by rapidity of onset in a large proportion of cases, perhaps particularly so during epidemic periods, and the commencement of these cases showed no material difference from the average experience. Both these cases were definitely toxic and showed a complete absence of localising signs other than meningeal. We do not think a simple meningeal hæmorrhage would produce such clear clinical evidence of toxæmia, and while admitting the importance of the positive post-mortem findings in cases with somewhat similar signs and symptoms, we still hold our original view of our own cases.

We are, Sir, yours faithfully,

A. G. BANKS.
A. M. N. PRINGLE.

Ipswich, June 10th, 1926.

IMMUNISATION AGAINST MEASLES.

To the Editor of THE LANCET.

SIR,—In a leading article in your issue of May 22nd you speak of the production of active immunity in measles as being still in the experimental stage. I think an account may interest you of my experience when in charge of the Maison Maternelle at Châlons-sur-Marne last year. Apart from the obstetric wards this institution contains a pouponnière of four wards for 38 babies and a ward for children of 1–4 years. During July, 1925, a severe epidemic of measles attacked every child in the latter. Two of them had broncho-pneumonia and all were severely ill. All inter-communication with the pouponnière was stopped and the ward and its staff were isolated. On August 8th, at 5 P.M., Marcel M., aged 9 months, in Ward No. 1 (13 babies) was found to have a temperature of 38·3° C., with running eyes, coryza, and redness of throat. Until this moment he had had no symptoms of illness and the morning and evening temperature had been normal. He was at once isolated, and on August 10th had a typical measles rash. On the same day three other babies in Ward No. 1 began to cough and sneeze. On August 11th Antoinette M., aged 5 months, in Ward No. 2 (17 babies) had a temperature of 39° C., but no running of the nose. On August 14th all the babies, except Marcel M., received a subcutaneous injection of 3 c.cm. of *sérum de convalescent de rougeole* from the laboratory of the Claude Bernard Hospital, Paris. No baby developed measles. Antoinette A., of Ward No. 2, had a slight rash on August 15th, which lasted 24 hours. Her temperature was then normal, she had no coryza, and was not isolated. The babies continued to gain in weight and to digest well. Their general condition remained excellent. There was no local reaction at the site of the injection and no elevation of temperature.—I am, Sir, yours faithfully,

June 10th, 1926. EDITH M. PYE.

CHRONIC DUODENAL AND GASTRIC ULCER.

To the Editor of THE LANCET.

SIR,—May I reply very shortly to the letters appearing in your issue of May 22nd bearing upon the paper which appeared under my name on May 1st? I am gratified by the kindness shown by Dr. Ryle and Mr. Adams in their criticism of what is acknowledged to be a very difficult subject. Mr. Adams (whose letter appears first) points out that according to my article I performed cholecystoduodenostomy where cholecystogastrostomy would have been the obvious thing to do. I omitted to record the fact that in both these cases a gastro-enterostomy had been performed without relief of symptoms. Mr. Adams also suggests that I do not believe in a rise of gastric acidity in gastric ulcer, and yet I claim to reduce it by cholecystogastrostomy. I wrote, "there is no characteristic wave at all," not that there is no wave. I ought to have emphasised the word "characteristic" and omitted the words "at all." I appreciate the well known and deservedly high place Dr. Ryle occupies in regard to analysis of gastric secretion, and I realise that his opinions are very valuable, but I am afraid I must differ from some of them. His chief complaint is that I do not value fractional analysis of gastric contents either before or after operation; more than this, he suggests that my experience of such analysis is very small. I do not think it necessary to add anything to what I said in my article with regard to my experience with the Reyfus tube, but as regards the rest I can assure Dr. Ryle the subject has been, and is being, adequately dealt with by the department of which I have control.

In answer to the very helpful letter from Mr. R. Leonard Ley in your last issue, I would say that American observers, using X rays, have shown that the stomach contents do not pass into the gall-bladder after the anastomosis, whereas by gastric analysis both they and we in Leeds have found that bile does pass freely into the stomach. Mr. Ley suggests that the performance of a modified Roux's operation whereby the divided proximal end of the jejunum is implanted into the stomach near the ulcer would ensure all the alkaline contents from the duodenum passing into the stomach. I think this a brilliant suggestion. A somewhat similar operation was described by me (*British Journal of Surgery*, 1914) for traumatic rupture of the duodeno-jejunal junction, and no apparent physiological disturbance took place. I think, however, that the modified Roux's operation might prove formidable in the hands of many surgeons, whereas cholecystogastrostomy would prove easy. I am, Sir, yours faithfully,

Leeds, June 3rd, 1926. L. R. BRAITHWAITE.

HOMOGENEOUS RADIATION.

To the Editor of THE LANCET.

SIR,—The homogeneous radiation is generally accepted among radiologists. It seems daring, therefore, to question it. Nevertheless, on physical grounds I believe it to be wrong. My argument is as follows. First let the following axioms be accepted: (1) That unabsorbed radiation is therapeutically useless. (2) Therapeutic effect is directly proportional to absorption. (3) Absorption can only occur when the wave-length of the radiations is in resonance with those of the atoms on which it falls. This was first put forward by Grotthus and is now generally accepted.

Consider the physics of absorption for a moment. Atoms consist of positively charged nuclei with negatively charged electrons revolving round them. These negative electrons can only revolve round the nucleus in certain definite orbits. If the right type of radiation is supplied absorption occurs. That is the electron is changed from one orbit to another or if the stimulus is sufficiently great is ejected altogether. But "if radiation of inadequate frequency is supplied it cannot change the particle from one orbit to another, it will be ineffective and achieve nothing. The particle takes no notice of any but a whole quantum of energy. The quanta are not all of the same size. To remove a particle from orbit 1 to orbit 2 requires a large quantum. To remove one from orbit 5 to orbit 6 quite a small quantum suffices" (Lodge: Atoms and Rays).

My conclusion is that the ideal radiation is one consisting of widely different wave-lengths. Such a radiation would be capable of being absorbed by electrons revolving in widely different orbits. A step in this direction has already been taken by the combined use of radium and X rays. I think that an even wider spectrum than this is desirable. The homogeneous radiation with its sharply restricted wave-length must have a restricted absorption. It has, however, the merit of facilitating depth dosage.

I am, Sir, yours faithfully,

RICHARD E. SADLEIR, L.R.C.P.I., D.M.R.E.

Dublin, June 11th, 1926.

SNOW-BLINDNESS.

To the Editor of THE LANCET.

SIR,—I should like to comment shortly on one small part of Dr. W. Stewart Duke-Elder's very interesting article in your issue of June 12th. He says that the commonest form of solar photophthalmia "is that experienced after exposure to bright sunlight on a snow-field—usually called snow-blindness." In my experience, and that also of other explorers with whom I have associated, bright sun-glare on the snow is much less likely to produce symptoms of photophthalmia than a comparatively dull diffuse light. It is rarely that one finds a snow surface uniformly flat, like a tropic sea, for instance, and in sunlight irregularities, such as pressure ridges and lumps of ice, cast deep black shadows and stand out clearly, to be seen with little effort. The eye rapidly adapts itself to sun-glare, and rarely requires any special protection. On the other hand, in a diffuse light there are no shadows and details of the surface are hard to pick out, so much so that men on the march will stumble into large obstacles, of which till then they were quite unaware. Under these circumstances snow-blindness sets in rapidly—one hour without goggles may be sufficient to produce painful symptoms which develop within two or three hours of exposure. The condition can be prevented by means of properly designed snow goggles. I have used Crookes' B glass and Euphos 3 and found them effective, but to be sure of prevention side glare must also be cut off—best by a gauze of very fine mesh. The greater liability in diffuse light is, no doubt, largely due to the increased accommodative efforts used in an attempt to pick out detail from the dull whitish grey surroundings, devoid of colour or shadow, but the facts that side glare may cause the condition, and that goggles are effective to prevent it, show that this is by no means the only factor. Crookes and Euphos glass certainly give greater definition in bright sunshine, but this is not the case, or the improvement is very little, in diffuse light. In fact, most cases which I have seen have been due to men removing their goggles to get a clearer view. Fogging from deficient ventilation may, perhaps, have been the commonest cause for their removal, but had the loss of definition been at all considerable, the tendency would have been to clean and replace them at once. I have noticed also in other circumstances—e.g., when being driven across snow-covered tundra over a made trail, where there was no call for great accommodative effort, that a diffuse light was more irritating to the eyes than bright sunshine.

The injurious external stimuli acting upon the eyes in light diffused through cloud and reflected from snow must, therefore, be greater than those of sunlight reflected from the same surface. Since ultra-violet rays are responsible for the photophthalmic effects it would appear that there is a higher percentage in diffuse than in bright sunlight, but whether this is an established physical fact I do not know.

I can heartily endorse Dr. Duke-Elder's remarks as to the painful effects and the miserable condition produced in so far as snow-blindness is concerned. As standard treatment I used cocaine 3 per cent. followed by zinc sulphate ¼ per cent. in tabloid lamellæ. Adrenalin and pituitary extract gave striking and instantaneous relief for a short time, but their use was followed by an intense aching of the eye-balls and violent headache.

I am, Sir, yours faithfully,

A. H. MACKLIN,

Late Surgeon, Imperial Trans-Antarctic and Shackleton-Rowett Expeditions.

Dundee, June 13th.

TITLE OF APOTHECARY.

To the Editor of THE LANCET.

SIR,—In your issue of June 12th, under the proceedings of the General Medical Council, there is mention of an honours certificate being granted in obstetrics by the Society. Has not the time arrived when the ancient title of "apothecary" as applied to practitioners of medicine be eliminated? I presume that it would be a rarity, if indeed not a curiosity, to chance upon a modern holder of the licence of the Society fulfilling the duties and practice of men who were so ably described by Dickens, Thackeray, Trollope and other writers as an apothecary; while to the malicious, jealous, and unsuccessful it has often been used as a lever to the holder's detriment. Honours certificates may have their uses, but if the Society would endeavour to eliminate this word and modernise its title the certificate would be enhanced; the divorce from the druggist would be as decisive as that from barber and surgeon of the old days. I would suggest the letters should be L.S.P.S.—i.e., Licentiate of the Society of Physicians and Surgeons, thus avoiding conflict with existing examining bodies.

I am, Sir, yours faithfully,

GENERAL PRACTITIONER.

June 15th, 1926.

*** The practical suggestion has been made before with no result. There are real difficulties in changing the titles of Corporations which possess charters, are referred to in Acts of Parliaments, and hold property. There is also the view that to-day the world knows that apothecary is an old-world designation not defining the duties of its holder; members of the Cordwainers' Guild do other things than cordwain, and Yeomen of the Guard are no longer only yeomen. But our correspondent points to a situation which may, none the less, prejudice the holder of the L.M.S.S.A.—ED. L.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

J. J. Cusack to be Surgeon Lieut.

ROYAL NAVAL VOLUNTEER RESERVE.

The King has approved of the award of the Royal Naval Volunteer Reserve Officers' Decoration to Surg. Comdr. F. J. S. Heaney.

Col. W. P. Gwynn retires on retd. pay.

ROYAL ARMY MEDICAL CORPS.

Lt.-Col. O. W. A. Elsner retires on retd. pay, and is granted the rank of Col.

The undermentioned to be Lt.-Cols.: Maj. and Bt. Lt.-Col. C. R. Sylvester Bradley, vice Lt.-Col. L. Wood (promoted), and Majs. S. E. Lewis, vice Lt.-Col. and Bt. Col. H. B. Fawcus (promoted), and G. A. Kempthorne, vice Lt.-Col. O. W. A. Elsner to retd. pay.

Capts. C. I. Hannigan and J. Grant-Johnston to be tempy. Capts. and temporarily relinquish the rank of Capt.

General List.—J. J. Seaton to be Temp. Lt. whilst empld. as a Dental Surg.

RESERVE OF OFFICERS.

Capt. R. E. G. Phillips, having attained the age limit of liability to recall, ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. W. J. Harrison resigns his commn. and retains his rank, with permission to wear the prescribed uniform.

Lt. R. Jackson, late R.F.A., to be Lt.

ROYAL AIR FORCE.

Flight Lt. B. F. Haythornthwaite is granted a permanent commission in this rank.

Flying Officer A. A. Townsend is promoted to the rank of Flight Lt.

INDIAN MEDICAL SERVICE.

Lt. Col. H. M. Cruddas to be Col.

Lts. Som Dutt and Dawarka Prasad Bhargava to be Capts.

Shankar Parasharam Jashi, Sukumar Dutta Gupta, Kaikhushroo Maneckji Barucha, Monowar Khan Afridi, and Gurbaksh Singh Chawla to be tempy. Lts.

The King has approved the admission to the Ind. Med. Serv. of the following and to be Lts.: Bhagwant Singh Nat and Chiranji Lal Pasricha.

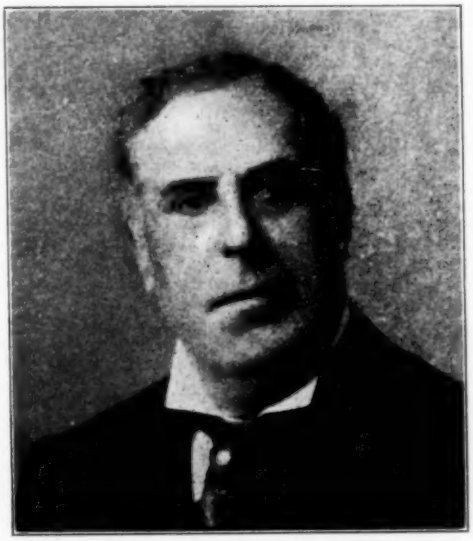
Obituary.

SIR HENRY MORRIS, BART., F.R.C.S.,

LATE PRESIDENT OF THE ROYAL COLLEGE OF SURGEONS OF ENGLAND.

WE regret to announce the death on Monday last of the distinguished surgeon and professional leader Sir Henry Morris. He had been in bad health for some little time, and an attack a few weeks ago occurring at his advanced age indicated the probability that his life would not long be spared.

Henry Morris was born in 1844, the son of a medical man, William Morris, who practised in Sussex, and the grandson of a medical practitioner in North Wales. He received his preliminary education at Epsom College. He was one of the first 100 entrants at the new institution with the interests and advance of which



SIR HENRY MORRIS.

his name will always be intimately associated; his date of entry was October, 1855, the head-master being the Rev. Dr. Thornton. From Epsom he proceeded to University College, London, and graduated in arts at a very early age, later joining the medical school at Guy's Hospital. He took the M.R.C.S. in 1866 and in 1873 the F.R.C.S., while he had already graduated in medicine at London University. He filled the resident posts at Guy's Hospital, and in 1870 was elected surgical registrar at Middlesex Hospital, thus commencing his long association with that institution. In the following year he was elected assistant surgeon to the hospital, on the staff at which time were, among others, Hulke and Douglas Powell (each like himself destined to preside over one of the great corporations), Lawson, Caley, and T. S. Cobbold, all names associated with various victories over disease. In his capacity both as teacher and surgeon he rapidly made a name for himself. He was extremely well read as well as clear, his undergraduate studies in moral philosophy and logic standing him in good stead, and under his peremptoriness of manner there lay a real desire to help the students in laying foundations of scientific knowledge along the path of surgery. He was elected to the full staff of the hospital in 1879 and served in that capacity for 27 years, until in 1906 he was made consulting surgeon.

In 1893 he commenced his first official connexion with the Royal College of Surgeons of England when he was elected on the Council, where for 21 years he served, and in 1906 was elected President in succession to Sir John Tweedy. Before election to the chair he had been for six years chairman of the Court of Examiners, where his intimate knowledge of anatomy both academic and in its application to surgical procedure, had a great influence. In 1898 he delivered the Hunterian lectures at the College, taking as his subject the origin and progress of renal surgery, a province of surgery in which he had already made a special mark. He was the first to perform the definite operation of nephro-lithotomy; the case was operated on in 1880 after diagnosis by Dr. Sidney Coupland, and the historic specimen, with the contemporary report, can be seen in the dean's room at the hospital. In 1903 he delivered the Bradshaw lecture of the College, taking as his subject cancer and its origin, and in that lecture he summarised a vast experience upon operable and inoperable malignant disease—again a province in which, alike by powers of diagnosis and manual ability, he had made for himself a prominent position. In 1904 he was appointed by the College to be its representative on the General Medical Council. This position he held till 1917, and during no less than 12 years was the treasurer of the Council. At the proceedings of the Council he was a frequent and strong debater, especially on educational questions, and more than occasionally his devotion to the interests of his College brought him into conflict with those whose policy was more directed to obtaining supervisory powers for the General Medical Council. He was particularly opposed to the compulsory registration of students by the G.M.C. and to the movement for disassociating the teaching of anatomy from the regular routine of a hospital medical school, a view which led him to give £1000 to the Middlesex Hospital to inaugurate an endowment fund for the medical school.

Morris was an accomplished writer, most of his contributions either as books, as chapters in symposia, or as scattered papers being devoted to one of three subjects—systematic anatomy and its surgical relations, renal and hepatic surgery, and the surgical treatment of cancer. His well-known System of Anatomy made its first appearance in the 'eighties and has now gone through five editions. Originally a sound text-book of human anatomy, it has been brought up to date and revised by a staff of authors representative both of English and American schools, and has become a comprehensive text-book, embracing a wide field of workers both here and in the United States. The Anatomy of the Joints of Man was published in 1878, and was recognised at once as forming a valuable addition to English text-books. It was poorly illustrated and the text was in some places redundant, but the accuracy of the descriptions and the skill and patience devoted to the explanation of the specimens noticed or depicted commanded immediate attention; there may not have been much originality of observation, but the minuteness of detail made of the book a valuable work of reference. He wrote the article on Injuries and Diseases of the Abdomen in Timothy Holmes's System of Surgery. He produced a treatise on Diseases and Injuries of the Genito-urinary Organs of the Male, which was followed up by a work on Diseases of the Kidneys and Ureter in which the ground covered by the Hunterian lectures of the College of Surgeons was thoroughly extended. A second edition of the work appeared in 1901. The prominent feature of all Morris's writings in this province of surgery was his quick insight into practical methods, which is well exemplified by the prompt employment that he made in his renal and hepatic work of the discovery of X rays. He was a contributor to Allbutt and Rolleston's System of Medicine and to Playfair's Gynæcology, while he wrote the articles on malignant disease and diseases of the genito-urinary organs in Ashhurst's Encyclopædia of Surgery. His contributions to the medical journals were frequent, and there will be found in our columns such instructive essays as the Cavendish lecture, which he delivered in 1893, his official lectures at the College of Surgeons, the Annual

Oration at the Medical Society of London delivered in 1905, and the Hunterian Oration of 1909.

On the conclusion of his office as President of the Royal College of Surgeons in 1909, Morris was created a Baronet, but cessation of office at the College was almost at once followed by his election to the position of President of the Royal Society of Medicine, a post which he held for two years. His interest in the subject of cancer, manifested in so much of his work and writing, took practical shape when the Imperial Cancer Research Fund was inaugurated in his house; of this body he was vice-president and treasurer.

When the late Sir Constantine Holman, who had been a most active treasurer of Epsom College for 19 years, resigned in 1906, the Governors unanimously selected to succeed him Morris, who had been a member of the Council since 1888. From the time of his appointment he worked for the College with untiring zeal and energy; perhaps only those who were associated with him on the Council were able to realise fully the extent of the time and labour which he devoted to the duties, but his communications to THE LANCET gave evidence of his deep interest in the Foundation. Besides acting as treasurer for 18 years, he was chairman of the Works Committee for almost as long a period, and in this capacity inaugurated or supervised many improvements at the College. Amongst these may be mentioned the erection of the Markham Skerritt Laboratories, the provision of improved heating and hot-water systems, enlargement of the infirmary, the provision of new workshops, gymnasium, and music block.

Morris was a great surgeon, and his leading position in the profession was obtained by industry, learning, enthusiasm for progress, and self-reliance. He was a man with strong opinions which opposition did not modify easily, as appeared from his conduct of business in many public capacities, and his views, whether of situations or of men, when arrived at were sure to be persistent, his individual estimate being led to play sometimes too prominent a part. To his high offices he brought a dignified presence, and also a fine ideal of work, but he had not quite the success as an orator which he coveted, his speeches being often too long and too detailed to carry the audience with him. But though such small criticisms were common in regard to him, Morris commanded the real respect of the profession in a universal way as one who had added to our store of learning and accomplishment, one who was untiring in his efforts to advance the national health, and one who was devoted to the best interests of his calling.

FREDERICK MOTT, K.B.E., M.D., F.R.C.P. LOND., LL.D. EDIN., F.R.S.,

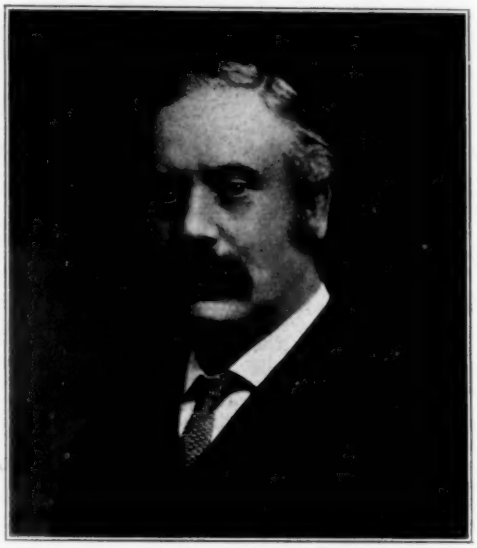
DIRECTOR, PATHOLOGICAL LABORATORY, MAUDSLEY HOSPITAL; CONSULTING PHYSICIAN TO CHARING CROSS HOSPITAL.

A BRIEF estimate of the work of Sir Frederick Mott, which appeared in these columns last week, announced to the medical public the loss which has been sustained by his death.

Frederick Walker Mott was the son of Mr. Henry Mott, of Brighton, where he was born in 1853, and received his early education. He entered the medical school of University College, where he graduated as M.B. with first class honours in 1881, being University scholar and gold medallist in forensic medicine. After holding the usual appointments he went to Vienna, where he studied pathology and mixed largely with foreign post-graduate workers, thus laying the foundation of his international position. He proceeded to the M.D. in 1886, taking also the M.R.C.P., and in 1884 was appointed lecturer on anatomy and physiology at the Charing Cross Medical School—the two subjects were covered by one lecturer very frequently 40 years ago. This appointment he obtained on the direct suggestion of Burdon-Sanderson, who wrote disclaiming any knowledge of Mott save that derived from his work, certain portions of which had come before him and had much impressed him. In 1890 he was elected assistant physician to the hospital, with special charge of diseases of children, while he supervised also the electrical department. He became full physician three years later, and lectured in the school first on general pathology and then on neurology. For a time he was chairman of the school committee, and in all these important connexions with the school and hospital he has left behind him a memory for unceasing interest in the institution and in the welfare of the students, for devotion to work, and for great personal kindness.

Mott's labours and performances as a neurologist were so important and so far-reaching that a summary of them is not an easy task. The work of many men who have enriched our scientific knowledge may be often dealt with as a series of more or less independent contributions, the value of each being unrelated in the historical sense to its predecessor. To study the influence of Sir Frederick Mott on medical and scientific thought is in a very special sense to study historically the development of his life's work. The work of Mott, beginning with broad fundamental studies of the physiology of the nervous system, progresses in a logical order to the examination of the structure on which physiological activity depends, next to the pathological disorders of structure, later to the concomitant evidences of functional disorder attending it, and finally to considerations of the psychological implications of pathological disturbances in the nervous mechanisms.

Mott was first drawn to the study of the nervous system in the years succeeding the fundamental work of Hitzig, Munk, and Ferrier, at a time when there was still much to be done by broader and freer



[*Elliott & Fry.*

SIR FREDERICK MOTT.

experimental methods than those that are possible in the present day. His work in conjunction with Schäfer on cerebral localisation added much to our knowledge of the motor functions of the cerebrum. Later followed much work on the sensory functions of the cortex and his well-known experiments with Sherrington on the apæsthetic limb. Other work followed dealing with the functional activities of the spinal cord. From these physiological experiments Mott turned his attention to the histology of the nervous system. He demonstrated the thalamic connexions of the fillet and did much to formulate the anatomy of the spinal encephalic systems.

On his appointment as pathologist to the Central Laboratory of the London County Asylums, Mott began to interest himself more especially in the pathology of the nervous system in connexion with the psychoses. With characteristic directness he dealt first with the one form of insanity which in those days was recognised as undoubtedly associated with gross changes of the central nervous system. Krafft-Ebbing had already proclaimed the syphilitic origin of general paralysis, but his views were only accepted by a minority of psychiatrists in this country, and, as Mott pointed out in his epoch-making paper on the Ætiology of General Paralysis, the word syphilis did not even find a place in the index of Bevan Lewis's standard text-book on psychiatry. By the analyses of a vast amount of clinical and anatomical evidence, nearly all of which was collected and prepared in his laboratory, the syphilitic origin of general paralysis was once and for all irrefutably demonstrated in days before the Wassermann reaction had made the path of investigation comparatively easy. Mott's great work on the relation of syphilis to insanity and tabes was published in the first volume of the *Archives of Neurology*, which he founded and continued to edit. In the successive volumes of the *Archives* appeared numerous studies on the various aspects of the pathology of the nervous system in the psychoses, all tending to establish more and more firmly the correlation of structural change in the nervous system with disorders of conduct.

The responsibilities of his office led him at the same time to undertake investigations which had a far-reaching influence on the treatment of the insane. The hygienic condition of the mental hospitals was 30 years ago very far behind the standard which obtains to-day, and Mott threw himself whole-heartedly into the work of reform. He had in the early days to encounter great obstacles and to overcome much ill-informed opposition, but it is from his inquiries into the bacteriology of hospital dysentery and tuberculosis, and by the reforms which he advocated, that an enormous reduction of the mortality from these diseases was achieved in the mental hospitals. His influence also made itself felt in countless reforms of the dietary and general hygiene of mental patients, and throughout his whole career he was animated by a very intense sympathy and human interest in the insane.

At the beginning of the present century Mott had already accomplished a vast amount of work on the investigation of the nervous system by physiological and anatomical methods, but he was quick to perceive their limitations and he became convinced that the future of pathology was to be to a great extent in the hands of the biochemist and physicist. Although he recognised that these more specialised investigations required an entirely new orientation he attacked the problems with conspicuous courage. The cerebro-spinal fluid as the supposed nutrient medium of the central nervous system first engaged his attention, and though he later on abandoned many of the views that he advanced together with Halliburton on the source of choline, his Croonian lectures still remain a record of the first attempt to seek for products of nervous disintegration in the living body. Later he followed up the same line of inquiry with micro-chemical methods.

The importance of the study of the autonomic nervous system and endocrine organs to psychiatry engrossed him later. He perceived that the mechanisms of the affective states were likely to be of supreme importance in the understanding of disorders of conduct. He proceeded to concentrate his attention on the pathological histology of the secretory structures and the vegetative nervous system. His studies on the endocrine organs and the sympathetic system in dementia præcox are of fundamental importance. It is in a great measure due to this work that whatever view we may take of the origin of the psychical symptomatology of dementia præcox it is possible to trace much of the disordered conduct to a definite and widely spread bodily change. In the group of psychoses due to endocrine disorders and many of the types of manic-depressive insanity he was again able to point to a generalised bodily disturbance.

Mott believed that the study of the pathological anatomy of dementia præcox afforded some evidence of its congenital origin, and in an attempt to further this view he devoted much attention to the study of heredity in the insane. From an analysis of the vast material that he collected from the London mental hospitals he formulated the "Law of Anticipation" in insane stock, according to which the psychotic factor appears earlier in each succeeding generation and thus unaided nature tends to eliminate the tainted progeny. He pointed out that this factor was of greater importance in the elimination of hereditary psychoses than anything that could be achieved by segregation or sterilisation, since the period of greatest fertility precedes the development of those symptoms which would bring the individual under control.

During the war Mott acted as consultant to a neurological clearing hospital, and for a time his attention was to some extent diverted from the study of the psychoses to that of the neuroses. He found that in the vast majority of cases of war-time neurosis there was a history of previous nervous instability, and he taught that the strain of war only became an effective cause of neurosis in those patients who already possessed a constitutionally neuropathic disposition. In other words, he considered that just as his investigations of the psychoses had demonstrated pathological changes in the nervous and somatic mechanisms, so a similar disturbance should be demonstrable in the neurotic, and this disturbance he suspected to be in the mechanisms subserving the organic response to emotion. During this period he devoted much time and thought to the adjustment of organic pathology to the facts of pathological psychology. He was frankly sceptical of the results claimed for the methods of psycho-analysis, and in his psychological investigations he adopted a modified behaviouristic attitude. He steadfastly declined to commit himself to any metaphysical theories of the relation of mind and body. He had early revolted from the crude materialism of Victorian physiology, and beyond this point as a scientific worker he refused to go.

No appreciation of the influence of Mott on medical science would be complete without some reference to the part that he took in the foundation of the Maudsley Hospital. He regarded the formation of a school for the teaching of psychiatry and the furtherance of research work as one of the great achievements of his life. To this end he induced the London County Council to establish well-equipped clinical laboratories at each of the mental hospitals which are conducted in close connexion with, and to some extent under the supervision of, the Central Laboratory at the Maudsley Hospital. It is mainly due to his efforts that a Diploma in Psychological Medicine has been established by the London colleges and many of the universities, and he acted as honorary director of the courses held for this degree at the Maudsley Hospital, where to the last he lectured on pathology and pursued his research work in the laboratory.

The great work accomplished by Mott for scientific psychiatry was not alone dependent on the value of his monumental researches. His life was characterised by an innate modesty and simplicity of character which made him accessible to all those who wished to consult him, and there are few workers in the field of psychiatry who have not at some time personally benefited by his common sense and scientific acumen. His kindliness endeared him to all, and those who had the privilege of working with him will remember him both as a great master and a great friend.

His publications were numerous and a very large proportion of them have appeared in these columns, where will be found the Croonian lectures delivered before the Royal College of Physicians of London,

the subject being the degeneration of the neurone, the Lettsomian lectures delivered before the Medical Society of London on the effects of high explosives upon the central nervous system, and many contributions upon various neurological conditions. He wrote on these in the Encyclopædia Britannica, and contributed frequently to the *Transactions* of the Royal Society and to *Brain*, which he edited, as well as contributing largely to the *Archives of Neurology and Psychiatry*, which he founded. The material for all this work was obtained from his hospital wards and from his opportunities as pathologist to the London County Asylums, so that all his written work was informed throughout by his personal experience. Elected F.R.S. in 1896, he was also Fothergill Gold Medallist, Moxon Gold Medallist of the Royal College of Physicians, and a Fellow of University College, London, and had been Fullerian Professor of the Royal Institute. He was created K.B.E. in 1919, held a Roumanian Order, and was a corresponding member of many foreign societies.

In private life his widely acknowledged distinction made no difference to his unassuming manner. He was a kindly friend and a generous host, a quietly amusing talker, and devoted to music. He married in 1885, Georgiana, daughter of the late Mr. G. T. Soley, by whom he had four daughters, to whom we extend all sympathy. A largely attended memorial service was held at St. Martin's Church on Wednesday last.

ARTHUR CONYERS INMAN, M.B., B.CH. OXF.

THE medical profession has suffered a severe loss by the untimely death of Dr. A. C. Inman, for he was a pathologist who touched the practice of clinical medicine at many points.

Arthur Conyers Inman was born in Kensington in 1879, the son of the Rev. H. T. Inman. He was educated at Haileybury and St. Edward's School and Wadham College, Oxford, taking his degree in natural science in 1900, then going on to St. Thomas's Hospital, London, for the clinical part of his training. After qualifying in 1904 and holding resident appointments at St. Thomas's and the Brompton Consumption Hospitals he became interested in pathology and worked in Sir Almroth Wright's laboratory at St. Mary's, at the Pasteur Institute in Paris under Metchnikoff, and as voluntary assistant in the pathological department at Dresden; it was only after obtaining the broad view that comes from seeing methods and following other people's investigations on a large scale that he returned to London to become superintendent of the pathological laboratories at the Brompton Hospital. Here he became counsellor and friend to successive generations of house staff and resident officers, causing them to look into the pathological basis of their clinical work and receiving himself stimulus to successive investigations. His early association with Dr. M. S. Paterson was especially fruitful. Inman devoted much time to estimating the exact value in the diagnosis of tubercle of such helps as the opsonic index, complement fixation, the Arneth index, and the sedimentation test, but he always made it clear that the interpretation of these results rested with the clinician who could take into consideration all the factors in diagnosis. In all his work Inman gave the closest attention to detail, and it was characteristic of him that he would undertake nothing unless he could do it thoroughly. A few successful cases in the early stages of experiment never misled him to publish them as results. While, therefore, his contributions to medical literature may be comparatively few they are at least sound. His work, as that of any honest worker, often led him down a blind alley; he labelled these alleys so that no time need be wasted by others in traversing them. One of these blind alleys was an attempt to find a specific treatment against secondary infections in cases of advanced tuberculosis. Inman concluded from his work that there was no hope of a successful issue in this direction. It was Inman who did what no clinician had succeeded in doing; he suggested a simple clinical classification of pulmonary tuberculosis, and many practitioners have reason to bless him for the precision of the three groups: resting febrile, resting afebrile, and ambulant afebrile cases.

During the war Inman became honorary captain in the R.A.M.C., and was posted as specialist bacteriologist to various centres. At one or other of the research laboratories attached to the Expeditionary Force in France he was able to make a study of the biology of infected wounds and especially of the tryptic properties of pus which led to important

DR. A. C. INMAN.

deductions in the choice of antiseptics and the mechanism of wound drainage. Later on, at the Mont Dore Military Hospital at Bournemouth, he pointed out the high percentage of dysentery convalescents who were returning to this country carrying entamœba cysts and showed the need for careful protozoological examination of every case of dysentery coming under investigation. During this time he was engaged with Prof. G. Dreyer and others in a study of the agglutination curve in inoculated persons which resulted in a singularly valuable clue to the diagnosis of typhoid and paratyphoid fevers, the results being interesting for the high degree of mathematical accuracy. Much of this work was embodied in reports presented to the Medical Research Council.

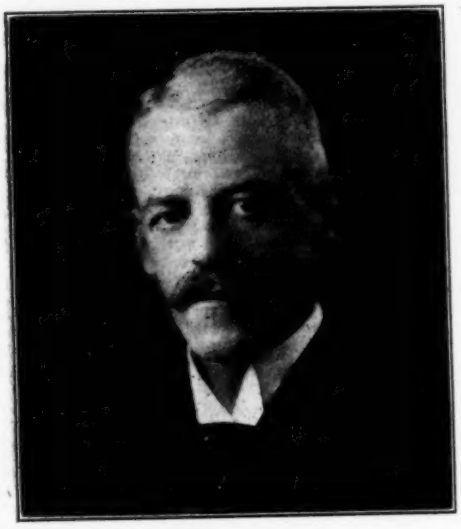
Something should be said of Inman's powers of organisation, a quality much valued by those who worked with him. His orderly mind would make a success of any meeting, no doubt because he was in the habit of giving the same thought and attention to detail in the arrangement of a conference as he did to making up a dinner party—and he was a charming host. He was a good linguist and always followed the foreign literature on the subjects he was studying, but not to the exclusion of the work done at home with which he was fully acquainted. Hence he was an ideal colleague in literary work, and the text-book on pulmonary consumption published in collaboration with the late Dr. A. C. Latham owed much to Inman's careful preparation which formed its groundwork.

Dr. Inman was twice married; in 1909 to Dorothy, only child of Dr. F. J. Wethered, and in 1919 to Mlle. Colette Frey of Paris. Travel came first among his recreations, but he was also a keen cricketer and a lover of good music. His death, which occurred in a nursing home at Rouen, was due to the disease which he spent his life in investigating, accelerated at the last by glycosuria.

GERHARD HOTZ, M.D. BASLE AND WÜRZBURG,

PROFESSOR OF SURGERY AND DIRECTOR OF THE SURGICAL CLINIC IN THE UNIVERSITY OF BASLE.

THE death of Prof. Hotz is a severe loss to surgical teaching and removes a figure loved and honoured far beyond his native city. Gerhard Hotz was born in Basle on June 8th, 1880, the son of Dr. Rudolf Hotz-Linder, teacher in the High School. He took the Federal qualification in 1905, became surgical assistant in the Bürgerspital under Prof. Enderlen, and followed his master to Würzburg in 1907, where he gained a thorough introduction to modern surgical method and began to acquire organising ability. After taking his degree in Würzburg in 1909 he received the title of professor in 1911 and shortly afterwards refused an invitation to Chicago in order to become surgeon in charge of the Deaconess House in Freiburg. It was while he was there that war broke out and Hotz received permission from the Swiss Army Medical Department to remain in Freiburg, where he took over a large part of the systematic teaching and became responsible for a war hospital which, with its adnexa, gave him at times 600 beds under his personal care. At this period he made intensive studies of gunshot nervous injuries with Dr. Hoche, director of the Nerve Clinic, and with an extensive private surgical practice lived an extraordinarily full life complicated by shortage of



PROF. HOTZ.

food and harassed by the activities of enemy aeroplanes which destroyed the Anatomical Institute close to his hospital.

In 1918 Hotz returned to Basle to occupy the surgical chair left vacant by the departure of de Quervain for Berne. The position of a professor of surgery in a continental clinic is something different from what we know in this country. He is the absolute head of a surgical establishment which includes laboratories, X ray and electro-therapeutic equipment, and through his hands pass all the important and exceptional surgery of the district. It thus becomes easy for him to organise through his assistants clinical demonstrations on a grand scale and to place the teaching of surgery on a systematic basis. Less fortunate surgeons visiting his clinic found Hotz teaching elementary students by means of lecture-demonstrations in the course of which patients, museum specimens, skiagrams, and diagrams illustrating anatomy, physiology, and pathology were shown. The pressure of one button brought up a fresh blackboard or a new drawing, another excluded daylight in a few seconds, every possible dissection was ready to hand, and his voice was never drowned by the roar of traffic. His writings include useful work on abdominal emergencies and on blood transfusion, but his teaching for the most part has no record except in the careers of his assistants and pupils.

In physique Hotz was a slight, alert man of medium height with quiet incisive manner and unfailing sympathy both for patients and students. A visit paid to Basle three years ago by the heads of surgical units in this country gave him an opportunity for intimacy which was availed of then and since by both parties. One of the visiting surgeons writes of him as a man who exerted a good influence which could be seen and felt in all his surroundings. "Hotz was," he adds, "more than a surgeon, he was a philosopher." He played a prominent part in the life of his native city and would have served on municipal and federal councils had his strength permitted, but his work was carried on under the constant shadow of illness. Just after being appointed to the chair of surgery he had a gastric perforation which required immediate operation, and once again during his term of office he came under the surgeon's knife. On this account he forswore all enjoyments and engagements outside the work of the clinic and practised a rigid abstemiousness. His premature death at the age of 46 was due to the perforation for the third time of a gastric ulcer.

Prof. Hotz was happily married to Frl. Orsolina Fanconi, of Samaden, and surgeons in many lands join in sympathy with his widow and six children.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a meeting of the Council held on June 10th, Sir John Bland-Sutton, President, being in the chair, diplomas of Fellow were conferred upon 27 men and 2 women who were successful at the recent examination held from May 20th to June 2nd. Of the 110 candidates who presented themselves, 34 were approved and 76 were rejected. Five candidates—G. F. G. Batchelor (Guy's), B. H. Boggon (St. Thomas's), G. F. Gibberd (Guy's), R. W. Jones (Liverpool), and John Lewin (Guy's)—are not yet of age to receive the diploma. The following are the names and medical schools of the candidates upon whom the diploma was conferred:—

Geraldine M. Barry, Royal Free; H. Barbash, Cambridge and St. Bart.'s; R. Brooke, Guy's; B. H. Burns, Cambridge and St. George's; D. A. Davies, St. Thomas's; J. L. Diggle, Melbourne and Guy's; H. C. Edwards, King's Coll.; K. H. Hadley, Melbourne and Guy's; L. M. Ingle, Cambridge and London; Erna Henrietta Jebens, St. Mary's; S. R. Joglekar, Univ. Coll. and Guy's; R. P. S. Kelman, Otago; G. King, London; F. Langford, Bristol and Guy's; F. Louis, Univ. Coll.; C. A Lupton, Cambridge and St. Thomas's; A. L. McGregor, Edinburgh; J. D. McLaggan, Aberdeen and St. Bart.'s; D. P. Marks, St. Thomas's; D. S. Middleton, Edinburgh; D. W. G. Murray, Toronto and London; F. C. Ormerod, Manchester and Westminster; G. G. Penman, St. Thomas's; F. W. M. Pratt, St. George's; J. N. Sankey, Birmingham; J. J. Savage, Oxford and St. Bart.'s; W. R. Spurrell, Guy's; H. J. Taggart, Belfast and London; and C. H. Thomas, St. Bart.'s.

The diploma of Member was conferred upon A. H. F. Cole, Durham University, and L. Dass, Punjab and Middlesex Hospital, who have now complied with the by-laws of the College.

The following gentlemen were elected examiners for the ensuing collegiate year:—

Board of Examiners for the Fellowship.—Anatomy: William Wright (London) Frederick G. Parsons (St. Thomas's), W. E. Le Gros Clark (St. Bart.'s), and Cecil P. G. Wakeley (King's Coll.). Physiology: David H. de Souza (King's Coll.), F. Roberts (Cambridge), J. B. Leathes (Sheffield), and Herbert E. Roaf (London Hosp.).

Conjoint Board.—Biology: T. W. Shore (St. Bart.'s) and James P. Hill (Univ. Coll.). Anatomy: Henry A. Harris (Univ. Coll.), Oscar S. Hillman (Middlesex), and John B. Hume (St. Bart.'s). Physiology: C. A. Lovatt Evans (St. Bart.'s) and G. A. Buckmaster (Bristol). Midwifery: Eardley Holland (London), Donald W. Roy (St. George's), H. Beckwith Whitehouse (Birmingham), and Clifford White (Univ. Coll.).

Sir Cuthbert Wallace and Prof. William Wright were appointed to conduct the examination in pathology which candidates will be required to pass under the revised regulations of the Conjoint Board.

UNIVERSITY OF LONDON.—The following students have passed in one of the two groups of subjects for the Third (M.B., B.S.) Examination for medical degrees:—

Group I.—Florence A. Adam, London Sch. of Med. for Women; Shriharsh Chintaman Bakhle, Guy's Hosp.; Kathleen Blake, King's Coll. Hosp.; James W. Bottoms, London Hosp.; Edith D. Bowie, King's Coll. Hosp.; Alison M. Clark, London Sch. of Med. for Women and St. Mary's Hosp.; Frederick J. T. Foenander, Middlesex Hosp.; Dora J. Fox, London Hosp.; Elsa C. A. Fristedt, London Sch. of Med. for Women; Bernard M. C. Gilsenan, St. Bart.'s Hosp.; Minnie Gosden, London Hosp.; Charles H. Hampshire, Univ. Coll. Hosp.; Catherine M. Hext, London Hosp.; David P. Holmes, Westminster Hosp.; Morfydd R. Jones, London Sch. of Med. for Women; Michael C. Lavin, London Hosp.; Solomon Levy, Middlesex Hosp.; Norman W. MacKeith, Guy's Hosp.; Evelyn T. D. Maclagen, St. Mary's Hosp.; Evelyn M. Pakeman, Londn Sch. of Med. for Women; William E. Parry, London Hosp.; George E. G. Peirce, St. Mary's Hosp.; Agnes N. Ramsbotham, London Sch. of Med. for Women; Jacobus W. Schabort, Guy's Hosp.; Eustace F. Stead, London Hosp.; Edith A. Straker, London Sch. of Med. for Women; Sylvia Sworn, Univ. Coll. Hosp.; Frederick W. Ta'Bois, London Hosp.; Edith M. Webb, London Sch. of Med. for Women; and Herbert F. Wilson, London Hosp.

Group II.—James R. Beagley and Wynn R. W. Bonner-Morgan, St. Bart.'s Hosp.; Rose A. Carter and Evangeline A. Clark, London Sch. of Med. for Women; Arthur C. Counsell, Middlesex Hosp.; Brian R. Crossley, Univ. Coll. Hosp.; Muriel Davies, Westminster Hosp.; John C. G. Dickinson, Guy's Hosp.; John D. Durance, St. Mary's Hosp.; Donald C. Fairbairn, Oswald F. Farndon, and Maurice Fishman, St. Bart.'s Hosp.; Stanley C. Gawne, University of Liverpool; Sydney A. Grant, London Hosp.; James I. Griffiths, Univ. Coll. Hosp.; Frederick D. M. Hocking, Middlesex Hosp.; Douglas S. Huskisson and Frederick H. K. Knight, Guy's Hosp.; Elsie Lyon and Margaret B. MacDonald, Charing Cross Hosp.; Lewis J. McGregor, St. Thomas's Hosp.; Ian McPherson, Middlesex Hosp.; Mary A. Marshall, St. Mary's Hosp.; George A. Martin, Guy's Hosp.; Grace E. Mizen, Charing Cross Hosp.; George A. H. Norman, Westminster Hosp.; Bethan Phillips, Univ. Coll. Hosp.; Howel J. Powell, St. Mary's Hosp.; Muriel A. Pugh, Charing Cross Hosp.; James E. C. Rouse, St. George's Hosp.; Douglas J. L. Routh, Univ. Coll. Hosp.; Lewis H. Savin, King's Coll. Hosp.; Sidney T. Seccombe, St. Thomas's Hosp.; William D. Sheldrake, Guy's Hosp.; Mary Stirk, University of Manchester; Stephen V. Strong, Guy's Hosp.; Oxburgh G. Tippett, St. Thomas's Hosp.; John R. Tree, Middlesex Hosp.; and Elizabeth M. Whishaw and James T. Wybourn, St. Mary's Hosp.

UNIVERSITY OF BRISTOL.—At examinations held recently the following candidates were successful:—

FINAL EXAMINATION FOR DEGREES OF M.B., CH.B.

Part II., with Second-class Honours.—Stanley P. Taylor (distinction in Pathology).

Pass.—Richard E. Satchwell.

Pass (completing Examination).—John F. O. Bodman, Muriel E. Drew, Frank J. Farr, Mildred B. Harvey, and Arthur A. B. Vincent.

In Group I. (completing Examination).—Cecily France-Hayhurst.

In Group I. only.—Ernest May and Ernest S. Rogers.

TUBERCULOSIS SOCIETY.—A meeting of this society will be held on June 26th, at 3.30 P.M., at the Queen's Hospital, Sidcup. A demonstration of the ultra-violet ray department of this hospital, followed by lantern demonstration of radiograms, has been arranged.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—On June 24th, at 2.30 P.M., Mr. H. Tyrrell Gray will give a special clinical demonstration in surgery at the Great Ormond-street Hospital, and on the 25th Mr. Goulden at the Royal London Ophthalmic Hospital will give a clinical demonstration in ophthalmology at 12.45 P.M. Both demonstrations are open to the medical profession without fee. The following courses will be held during July: At the N.E. London Post-Graduate College (Prince of Wales's General Hospital), Tottenham, a course in medicine, surgery, and the specialties, lasting from July 19th to 31st and occupying all day. From July 5th to the 17th the National Hospital for Diseases of the Heart will give an all-day course in cardiology, and between the same dates there will be a course in dermatology at the Hospital for Diseases of the Skin, Blackfriars, taking place each afternoon. The West End Hospital for Diseases of the Skin will begin a month's course on July 19th, consisting of lectures and clinical demonstrations upon selected cases each afternoon at 5 P.M., and finishing on August 14th. From July 12th to the 24th the Royal Eye Hospital will give a series of demonstrations on the treatment of diseases of the eye, taking place every afternoon at 3 P.M. Copies of all syllabuses, of the General Course Programme, and of the *Post-Graduate Medical Journal* may be had on application to the Secretary of the Fellowship of Medicine, at 1, Wimpole-street, London, W. 1.

KING'S COLLEGE HOSPITAL.—It is announced that the reduced expenditure of 1925 will allow of the re-opening of one of the closed wards.

RESEARCH DEFENCE SOCIETY.—The annual general meeting will be held at the House of the Medical Society of London, 11, Chandos-street, Cavendish-square, W., on Friday, June 25th, at 3 o'clock, when the chair will be taken by Lord Lamington, and Dr. J. A. Murray will give an address on the Experimental Attack on Cancer.

WELSH NATIONAL SCHOOL OF MEDICINE.—Mr. A. W. Sheen, professor of surgery, has been appointed dean of the faculty of medicine on the retirement of Prof. T. Graham Brown from this office. Sir Ewen Maclean, professor of obstetrics and gynæcology, has been elected President of the British Medical Association for 1928, when the annual meeting will be held at Cardiff.

MEDICAL GOLFING SOCIETY.—The 29th annual summer meeting was held at Wentworth on June 10th. The scratch results were as follows: THE LANCET Challenge Cup, H. D. Gillies. Milsom Rees Challenge Cup, A. H. Gosse and F. A. Juler. Handicap results were: Class I., A. S. Gordon and A Galletly tied at 1 down. Class II., C. Scott Gillett and F. A. Juler tied at 2 down. Foursomes were won by T. P. Kolesar and W. R. Bristow.

ST. BARTHOLOMEW'S HOSPITAL AND COLLEGE.—Prof. Hugh Cabot, professor of surgery in the University of Michigan, who has been taking charge for a fortnight of the teaching of surgery in Sir Holburt Waring's Clinic, was admitted on June 9th as an honorary perpetual student of St. Bartholomew's Medical College, an honour conferred only once before, when Prof. Harvey Cushing had charge of the teaching of surgery in Prof. Gask's Clinic in 1922.

SOCIETY OF MEDICAL OFFICERS OF HEALTH: MATERNITY AND CHILD WELFARE GROUP.—The annual meeting will be held on July 6th at the Caxton Hall, Westminster, at 5.30 P.M. Mr. George Waugh will introduce a discussion on tonsils and adenoids in a paper on the Growing Significance of Diseased Tonsils and Adenoids: an Historical Survey, and will be followed by Dr. R. C. Clarke who will discuss the Ætiology of Enlarged Tonsils and Adenoids and the Causes of Failure of Operation. Dr. Harold Waller will then speak on the Early Symptoms and Signs of Ill-health Associated with Diseased Tonsils and Adenoids.

A dinner open to all medical practitioners attending this meeting will be held at the Florence Restaurant, 56, Rupert-street, London, W., at 7.30 P.M., on the same day (tickets 4s. each). Those who wish to attend this dinner are requested to communicate before June 30th with the hon. secretary, Dr. Margaret Emslie, at 1, Upper Montague-street, Russell-square, London, W.C. 1.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At the monthly meeting of the Faculty held on June 7th the following were admitted as Honorary Fellows of Faculty:—Sir Hector Clare Cameron, C.B.E., M.D., LL.D., and George Stevenson Middleton, M.A., M.D., LL.D. The following were admitted after examination as Fellows of Faculty:—Jethalal Mansingbhai Damany, M.B., B.S., Bombay; Geoffrey Balmanno Fleming, M.B.E., M.D., B.A., Glasgow; Thomas Jackson, L.R.C.P. Edin., L.D.S., Cheltenham; Robert Aim Lennie, M.B., Ch.B., Glasgow; John King Rennie, M.C., B.Sc., M.B., Ch.B., Glasgow; Charles Rudd, M.B., Ch.B., D.O.M.S., Birmingham; William Smith Syme, Junr., M.B., Ch.B., Glasgow; James Nisbet Tennent, B.Sc., M.B., Ch.B., D.O.M.S., Glasgow.

ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH.—At a meeting of the College held on June 8th the following motion came up for determination:—

That William Lloyd, a Licentiate of the College, registered as of 58, Brook-street, Grosvenor-square, London, W. 1, having acted in an unbecoming and unprofessional manner, in respect that he, being a registered medical practitioner: (*a*) Sought to obtain patients and to promote his own professional advantage by means of an article published in the *Daily Mail* of June 5th, 1925, entitled: "Hay Fever—New Treatment—Specialist's Report—Patients Cured"; which was based upon materials supplied by him; and (*b*) sought to obtain as patients certain persons who, after reading the article, had written to the *Daily Mail* for his address, and whose letters were forwarded to him by the *Daily Mail*, and to whom he wrote inviting appointments to be made for treatment, although they had not themselves communicated with him—be censured.

The motion was carried.

The College voted a donation of 100 guineas to the Scottish National Memorial to Queen Alexandra. The College voted a sum of 100 guineas to the Extension Fund of the Incorporated Edinburgh Dental Hospital and School.

H.R.H. the Duchess of York has succeeded Queen Alexandra as Patron of the British Dental Hospital.

Dr. Egerton Charles Grey, professor of chemistry in the Egyptian University, Cairo, has been given by the King Royal licence and authority to wear the Insignia of the Third Class of the Order of the Nile, conferred upon him by the King of Egypt for valuable services rendered.

INCORPORATED LANCASHIRE AND CHESHIRE SOCIETY FOR THE PERMANENT CARE OF THE FEEBLE-MINDED.—The annual meeting will be held in the Manchester Town Hall, at 3.30 P.M., on June 22nd.

BELGRAVE HOSPITAL FOR CHILDREN.—The Medical Report for 1925 points out that remarkably few infants died from congenital pyloric stenosis. Each of the 12 cases required operative treatment, but there were only three deaths.

LEEDS CHILDREN'S ORTHOPÆDIC HOSPITAL.—For the double purpose of providing an orthopædic hospital for children and preserving the amenities of Roundhay Park, the Corporation of Leeds have purchased Elmete Hall, and 51 acres, the property of Sir Edwin Airey, for £23,000.

WREXHAM WAR MEMORIAL HOSPITAL.—Prince Henry last week opened this hospital, the cost of which has exceeded £100,000. Of this sum £35,000 has been given by the William and John Jones Trustees, while the miners and workmen of East Denbighshire have contributed a further £26,000 paid at the rate of 2*d.* and 3*d.* a week for several years past. The hospital will serve a population of 100,000.

LONDON ASSOCIATION FOR THE CARE OF THE MENTALLY DEFECTIVE.—The annual meeting was held on June 17th. The general report of the work of the Association for the year 1925 shows a steady and unremitting progress. The statutory duties delegated to it by the London County Council and the Ministry of Labour have continued to be of the highest importance to those bodies. Exclusive of cases seen at schools for the mentally defective the Association has dealt with 8144 cases during the year 1925. A new duty has been delegated to the Association by the London County Council—namely, visiting cases on leave of absence from various institutions. These have chiefly been high-grade defectives over the age of 18, and altogether 81 have been looked after during the year under review. The placing in employment and after-care of boys and girls aged 16 to 18 has continued, and during 1925 nearly 400 cases were dealt with. The voluntary work of the Association, dependent to a certain extent upon a grant from the Board of Control, has been continued, but there is an urgent need both of funds and of adequately trained voluntary workers for this aspect of the Association's valuable activities.

AUSTRALIAN AND NEW ZEALAND MEDICAL ASSOCIATION.—A dinner meeting of this energetic young body was held at the Trocadero Restaurant on Friday evening last, June 11th, Mr. Joseph Cunning being in the chair. Those present included Prof. Mills, professor of medicine in the University of Melbourne, and Prof. L. E. Barnett, professor of surgery in the University of Dunedin, and the Editors of the *British Medical Journal* and THE LANCET were the guests. Prof. Mills, in an interesting speech proposing prosperity to the Association, paid a high tribute to the mother country alike for the beauty of its green landscapes and for its calm and cheerful behaviour under the recent dislocation of its whole business life. In special allusion to the employment of their opportunities by visiting students from Australia and New Zealand he criticised the amount of time that had to be spent on securing honorary degrees, and considered that a general policy of reform should place examination results in proper perspective, honorary degrees to be awarded later, not upon examination, but in return for good professional work. He did not think that post-graduate work was well managed in this country. Mr. Cunning, in reply, explained the rise of the society as due to the energy of Mr. E. T. C. Milligan, the hon. secretary, to whom all visitors from overseas turned immediately on their arrival for information as to how best to pursue post-graduate studies, and he admitted that Prof. Mills was right in thinking that as yet the facilities for such study, when present, were not adequately organised. He dwelt in an amusing vein on the great advantages derived by post-graduate students from overseas through the mere fact of a long travel and varied experience in different scenes. Prof. Barnett, in proposing the health of the guests, reminded the audience that next year there will be an Australasian medical congress to be held in Dunedin, of which he had been chosen president, and at which he hoped there would be a large gathering despite the distance. The guests having briefly replied, Mr. Muecke proposed a vote of thanks to the chairman of the dinner and the secretary of the Association, in the course of which he asked Prof. Mills to reconsider his attitude towards the advisability of post-graduate students working for honour degrees, pointing out that the possession or absence of those degrees was used by all public or hospital authorities, rightly or wrongly, as a means of discriminating between candidates for appointments. Mr. Milligan, in a brief reply, mentioned that the Association now possessed over 300 members.

SWISS MEDICAL MEETING.—On May 15th and 16th the Medical Federation for the German and Italian parts of Switzerland held its annual meeting in Brunnen. The subject of the day was Philippus Aureolus Theophrastus Bombastus Paracelsus ab Hohenheim, one of the pioneers of modern medicine, and the surroundings of Brunnen lent themselves appropriately to the occasion, for Paracelsus was born in 1490 near Einsiedeln in the Canton Schwyz of a German father and a Swiss mother. The chief papers were read by Mons. Netzhammer, Roman Catholic Archbishop of Bucarest, a former scholar of the Monastery of Einsiedeln, who dealt chiefly with the philosophical works of Paracelsus, and by Prof. Sudhoff, who by his critical studies has done much to give to Paracelsus his proper place in the history of medical science. The connexion of Paracelsus with Switzerland does not end with his birthplace. He was for a short time professor of physics at the University of Basle, where he inaugurated his career by burning the works of Galen, and denouncing the Arabic masters whose teachings were then generally followed. His defiance of tradition provoked bitter animosity. The meeting at Brunnen reawakened interest in a great physician of the past who exerted a profound influence upon the medical beliefs of his time.

SOCIETY OF APOTHECARIES OF LONDON.—At their historic hall on June 15th the Society of Apothecaries gave a dinner to the Lord Mayor of London and the Sheriffs, the Master, Dr. Vincent Dickinson, presiding. The guests included H.E. the Marchese della Torretta, the Italian Ambassador; Sir Frank Dicksee, President of the Royal Academy; Sir John Rose Bradford, President of the Royal College of Physicians; Sir Joseph Chambers, Director-General, Medical Department, Royal Navy; Air Vice-Marshal D. Munro, Medical Director, R.A.F.; Sir StClair Thomson, President of the Royal Society of Medicine; Sir Francis Champneys, President of the Central Midwives Board; Sir Walter Fletcher, Secretary of the Medical Research Council; and the Editor of THE LANCET. After the loyal toast, the Master emphasised the honour done to the company by the presence of the Italian Ambassador, and proposed "The Health of the King of Italy," which was drunk with musical honours. The Lord Mayor, in response to the toast of "Health and Prosperity" to himself and his Sheriffs, claimed, as one who had travelled much that the work carried on by the Common Council represented a civic orderliness and prosperity that were without a rival elsewhere. "The Health of the Guests" was proposed by Dr. Alfred Hepburn, the Senior Warden of the Society, and was replied to by Sir Frank Dicksee, who spoke eloquently of the feeling of restful pleasure produced by dining in a friendly manner in a beautiful ancient building. "The Health of the Master" was proposed by Dr. Gordon Brown, the oldest member of the Society in the room. An excellent programme of music was rendered after the dinner.

LONDON AND COUNTIES MEDICAL PROTECTION SOCIETY.—The annual general meeting was held at Victory House, Leicester-square, London, on June 9th, Sir John Rose Bradford presiding. The Society, he said, continued to prosper; the volume of work had considerably increased, as well as the membership. Members, he thought, hardly realised the large amount of work done for them by the officers of the Society and its solicitors. A great bulk of the cases never came before the courts, the questions being satisfactorily settled without litigation. He desired once more to impress on members involved in a dispute of any kind, or in proceedings leading to a dispute, not to take any action of their own before communicating with the Society. In cases of injury, not necessarily obscure injury, practitioners should in their own interest always have an X ray examination made, or obtain a written statement that the patient's friends, or others, had refused to have such an examination. The financial position of the Society was, he said, quite sound as a result of a large reserve, and the total surplus funds in 1925 were not very distant from the surplus in 1923, in spite of the expenditure in 1924 of a sum of £7000 on a single case. His motion to adopt the annual report and statement of accounts was seconded by Dr. G. W. Hill, and carried unanimously. Dr. C. M. Fegen proposed and Dr. J. H. Stowers seconded the re-election of Sir John Rose Bradford as President of the Society for the ensuing year. The vice-presidents and retiring members of the Council were re-elected, and Sir William Hale-White was elected as an additional member of Council. Dr. C. M. Fegen was re-elected as treasurer, Dr. Hugh Woods, general secretary, and Mr. A. G. R. Foulerton financial secretary of the Society.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

ON Monday, June 14th, the Reading University Bill was read a second time.

Vaccination Bill.

On Tuesday, June 15th, Mr. GROVES presented a Bill to amend the law relating to compulsory vaccination, which was read a first time.

HOUSE OF LORDS.

TUESDAY, JUNE 15TH.

MIDWIVES AND MATERNITY HOMES BILL.

The Midwives and Maternity Homes Bill was considered on Report.

Part 1 of the Bill amends the Midwives Acts, 1902 and 1918. Clause 1 provides that if any person, being either a male person or a woman not certified under the Bill, attends a woman in childbirth otherwise than under the direction and personal supervision of a duly qualified medical practitioner, that person shall, unless he or she satisfies the court that the attention was given in a case of sudden or urgent necessity, be liable on summary conviction to a fine not exceeding £10.

During the Committee stage of the Bill in the House of Lords the clause was amended by the addition of the following proviso: "Provided that the provisions of this subsection shall not apply in the case of a person who, while undergoing training with a view to becoming a duly qualified medical practitioner or a certified midwife, attends a woman in childbirth as part of a course in practical instruction in midwifery."

The Marquess of SALISBURY, Lord Privy Seal, now moved to amend this proviso, so as to make it read, "a course in practical instruction in midwifery recognised by the General Medical Council or by the Central Midwives Board." He said that during the discussion of the amendment in Committee, Lord Knutsford expressed the view that the exemption for medical students and pupil midwives was not sufficiently safeguarded. On his suggestion, the Government now proposed that the exemption should only apply to students who were in training with a view to becoming duly qualified medical practitioners or pupil midwives, anxious to become certified midwives, if the course of practical instruction at which they were working was recognised by the General Medical Council or the Central Midwives Board.

The amendment was agreed to.

Clause 11 of Part 3, which is the interpretation clause, provides that a local supervising authority may grant exemption from the operation of Part 2 of the Act, which provides for the registration of maternity homes, of any hospital or other premises for the conduct of which a duly qualified medical practitioner resident therein is responsible, or any hospital or institution not carried on for profit, and not mainly used as a maternity home. It also provides that any person aggrieved by the refusal of a local supervising authority to grant exemption under Part 2 in respect of any hospital, premises, or institution, or by the withdrawal of any such exemption previously granted by the authority, may appeal against the refusal or withdrawal to the Minister of Health, who, after considering the matter, shall give such directions as he thinks proper and the authority shall comply with any directions so given.

Lord MUIR MACKENZIE moved to transfer these provisions from Part 3 to Part 2 of the Bill. He explained that his amendment did not touch the substance of the measure. He had been in communication with the Ministry of Health, who thought that the provisions referred to ought to be transferred to Part 2.

The Marquess of SALISBURY accepted the amendment, which was agreed to.

The Report stage of the Bill was concluded.

HOUSE OF COMMONS.

TUESDAY, JUNE 8TH.

PROTECTIVE DUTIES ON SCIENTIFIC INSTRUMENTS.

The House went into Committee on the Finance Bill, Captain FITZROY, Deputy Chairman of Committees, in the chair.

On Clause 10 (Continuation and Amendment of Part I. of Safeguarding of Industries Act, 1921), which deals with the safeguarding of key industries,

Sir R. THOMAS moved to leave out Subsection (1), which renews the duties under Part I. of the Safeguarding of Industries Act, 1921, for a further period of ten years from August 19th, 1926. He said that he had always opposed the principle of safeguarding key industries and he was as convinced to-day as he was when the Bill was first introduced that it was a pernicious one and had raised prices. It was unfair that the present Government should attempt to bind future Governments for such a long period as ten years.

Mr. DALTON said that this clause in the Finance Bill was a relic of war psychology and of conditions which had now very largely passed away. Even in 1921 it was thought that five years would be quite sufficient to enable these industries which were considered to be necessary on military grounds to establish themselves. In view of all that they had heard in recent months about the stabilisation of the European position as a result of the Locarno conversations, which it was hoped would soon be embodied in a fixed treaty, he submitted that the grounds on which Part I. of the Safeguarding of Industries Act was put forward were now completely inapplicable, and these provisions ought not to be re-enacted. It was not only proposed in this clause to continue the duties that had been in operation since 1921, but also gradually to extend the range of the articles subject to duty, and also, perhaps, to increase the rates of duty. Six thousand articles were dutiable under the provisions of the 1921 Act, and now that number was to be greatly increased, particularly under a provision which was bringing in all separate components and elements of the dutiable articles. In addition the duty was to be raised from 33⅓ per cent. to 50 per cent. on the greater part of the articles. There must be something very seriously wrong with a number of these industries if, in spite of five years artificial feeding by a subsidy from the consumers in this country, they were still unable to compete with their rivals on the continent of Europe, who had been going through a period of very much greater difficulty than the manufacturers of this country. He noticed—and he thought that it was significant—that in two or three places in the Report of the Board of Trade Committee reference was made to the inadequacy of the arrangements for research in the British industries concerned. With regard to optical instruments, laboratory porcelain, and standard electrical instruments, the Committee admitted that British manufacture was very much behind hand in research and the coördination of research and manufacture. The policy of 1921 has evidently failed to produce the results required.

Sir P. CUNLIFFE-LISTER (President of the Board of Trade) said that every single section of the House had at one time or another been committed to this policy, and rightly so, because every one of these industries was an essential one, not only in war, but also in peace. On a matter of scientific efficiency the view pronounced by men like Sir Richard Glazebrook, Director of the National Physical Laboratory, and Sir William Pope, who he thought by common consent was the greatest living chemist to-day, would carry great weight. He would like to express the gratitude of the Government to Sir Arthur Colefox, and the two great scientists he had mentioned, for a very exhaustive and valuable inquiry. But of course this did not come only as the considered opinion of the Committee, but also as that of the three fighting Services as to what was absolutely vital to them as well as to the peace-time industry of this country. So far from there being inefficiency the record of these industries showed improvement in quality, in research, and also steadily falling prices. Our pre-war production of fine chemicals was about 10 per cent. of our consumption; to-day we were producing something like 75 per cent. There was an extraordinary advance not only in quantity, but also in quality, and an export trade was beginning as well. Take insulin, a vitally important drug. In insulin, which they had entirely developed under the protection of these duties, this country had now a very large share not only of the home market, but of the world market as well. The quality was quite excellent. He took it that was why the foreigner was buying it. The development of this fine chemical industry had made an opening for our scientific men and chemists, and there were now three or four times as many skilled chemists employed as ever before. Prices were falling all the time, and the fall was most marked wherever there was competition with a foreign monopoly. Optical glass and optical instruments were absolutely vital to all the three Services. They were equally important to medical and scientific research. When Dr. Gye and Mr. Barnard, whose researches were so well known, were making researches into cancer and required a particular kind of microscope in their experiments, which had never been made and which had to be specially designed, it was a British firm of optical instrument makers who at a very early date were able to produce what was wanted. Originally they were only interested in optical instruments for the purposes of war, and, of course, for medical research. The use of optical instruments for the testing of a number of products in industry was steadily growing. Everyone knew the value of X rays in detecting any faults in the human body. The X rays to-day was being used to detect hidden faults in

the inside of almost every kind of article used in industry. If they took the chemical industry and the glass industry, it was common knowledge that in the great producing countries of the continent and the United States the capacity for production was greater than the output at present, and it would be perfectly simple if the Government withdrew the protection from these essential industries for foreign firms to produce on a larger scale which would suit them very well and to dump the surplus of their products in this country. They would be criminal if they did not continue for a reasonable period the full security and protection which had been so successful, not only in the case of these industries, but of other industries which depended upon them.

The amendment was rejected by 282 votes to 152.

An amendment proposed by Mr. GILLETT to limit the period of safeguarding to two years was negatived by 286 votes to 153.

Mr. PETHICK-LAWRENCE moved to leave out Subsection (2) of Clause 10, which raises the duties on optical glass and other goods to 50 per cent. of the value from May 1st, 1926. He said that glass was used for medical purposes, for research in hospitals in time of peace. The people who used that glass for these purposes wanted to secure it at a reasonably cheap price and if they were going to put an embargo, or at any rate a tariff, on the importation of efficient glass at a reasonable price from abroad, they were not benefiting as was suggested these users, but were injuring and to a certain extent crippling them on what they wanted to do. For hospitals and medical research efficient optical instruments were needed, and in order that the optical instrument industry might reduce its overhead charges and flourish they needed to get cheap materials. No one could pretend that if they put a tariff of 50 per cent. on the import of foreign glass they were going to enable these industries to get that glass more cheaply.

Sir P. CUNLIFFE-LISTER said that the more they produced the cheaper the product would be. The prices of these articles, which it was very difficult to produce cheaply, were only from 30 to 40 per cent. above pre-war prices, which, on the whole, was lower than the average rise in the price of other articles.

The amendment was negatived by 243 votes to 139.

Mr. PETHICK-LAWRENCE moved the omission of Subsection (3) of the clause, which adds to the Schedule of the Act the component parts of such optical instruments and scientific instruments as are chargeable with duty—amorphous carbon electrodes (but not including primary battery carbons or arc lamp carbons) and certain chemicals—and increases the duty on component parts of optical instruments from one-third to one-half of the value of the goods.

Mr. J. HUDSON, in supporting the amendment, said that it was not likely, even with very considerable scientific development, including the development of medical research, that in years to come there could be any return to the inordinate demand for the instruments dealt with in this section which was produced by the late war. In these circumstances one might ask what the Government expected to accomplish by putting on a duty of this sort.

Sir BURTON CHADWICK said a supply of optical glass and instruments of the first quality was essential to the prosecution of research in many very important branches of science. If there had been a serious fall in the optical industry it could be attributed largely to the immense accumulation of war surpluses of optical instruments which had not yet been used up in every belligerent country. That had produced an immense world reduction in the output of optical instruments and glass, and so the development of our optical production had generally been on a lessening scale in the years during which the 1921 Act had been in operation, but from their examination of the subject they found that the duty imposed had been of such value to the trade that it had actually saved it, in the opinion of the Board of Trade, from extinction. They believed that the duty which they were trying to impose would stimulate and develop the industry and help the British manufacturer to hold his own in competition with other countries. He believed that the industry was on the verge of a very much more prosperous condition. Safeguarding had not increased the price of one single item.

The amendment was negatived by 240 votes to 128.

Clause 10 was added to the Bill by 233 votes to 114 and progress was reported.

WEDNESDAY, JUNE 9TH.

Septicæmia following Childbirth.

Mr. PETHICK-LAWRENCE asked the Minister of Health whether his attention had been directed to the death of Mrs. Lily Maxwell from septicæmia following childbirth and to the comments of the Kingston coroner relating thereto, and whether he proposed to hold an inquiry into the case.—Sir KINGSLEY WOOD (Parliamentary Secretary of the Ministry of Health) replied: My right hon. friend's attention has already been called to this case and an inquiry is now being made by one of the medical officers of his department.

Open Spaces and Recreation Grounds in London.

Sir HARRY BRITTAIN asked the Minister of Health if he would inform the House what efforts were being made by his department to secure open spaces and recreation grounds for the inhabitants of Greater London and for the districts immediately adjoining this area.—Sir KINGSLEY WOOD replied: The initiative in this matter rests with the local authorities. In so far as loans for the acquisition of land are subject to the consent of his department, my right hon. friend is willing to consider applications sympathetically, but loans may be delayed in some cases by heavy rates and the present need for economy. I may add that my right hon. friend has made a practice of urging local authorities to reserve land for open spaces in their town-planning schemes.

THURSDAY, JUNE 10TH.

Medical Officers of Pensions Ministry.

Mr. ROBERT YOUNG asked the Minister of Pensions how many medical men were now employed by his department throughout the country as medical referees or in any other capacity; what fees were paid; what was the total cost per annum; and whether the appointments were whole or part time.—Major G. C. TRYON replied: There are 338 medical officers now in the regular employment of the Ministry, of whom 252 are employed in a full-time and 86 in a part-time capactiy. Of the full-time officers 50 are Permanent Civil Servants and the remainder are serving under contracts of temporary service varying from one month to three years. The total cost of these officers for the financial year ended March 31st, 1926, was £261,185, and the estimated cost for the current financial year is £222,240. In addition to the medical staff in regular employment it is still necessary to have frequent recourse to the assistance of private medical practitioners who act as examining medical officers (formerly described as medical referees), members of medical boards, supervisors of clinics, visiting surgeons, anæsthetists, &c., and are paid fees varying from £5 5s. to 5s., according to the nature of the services rendered. The total number now employed is 1752, and the fees paid during the financial year ended March 31st last amounted to £230,146.

Crown Nominees on the G.M.C.

Viscount SANDON asked the Vice-Chamberlain of the Household, as representing the Lord President of the Council, on what dates the appointments of the Crown nominees to the General Medical Council lapse; and whether he could undertake that they would then be filled by non-professional persons.—Major HENNESSY replied: The dates of expiry of the terms of office of the Crown nominees (other than that of Mr. Hilton Young recently appointed) on the General Medical Council are as follows: Sir Edward Coey Bigger, Jan. 23rd, 1927; Sir Nestor Tirard, March 2nd, 1927; Sir William Leslie Mackenzie, Oct. 27th, 1927; and Sir George Newman, Oct. 8th, 1929. It is not possible to say in advance what action the Lord President of the day may see fit to take when the occasion arises for filling these vacancies.

Maternity and Child Welfare in Welsh Mining Areas.

Mr. BARKER asked the Minister of Health if he was aware that the Welsh Board of Health were advising that no relief under the maternity and child welfare scheme be given to relieve distress arising out of the dispute in the mining industry but that such relief be given by the guardians of the poor, and that the Newport (Monmouthshire) Poor law union protested against this additional burden being placed on the funds of this union without any additional grant-in-aid; and would he consider cancelling this policy.—Mr. NEVILLE CHAMBERLAIN replied: It is no part of the maternity and child welfare scheme to relieve distress. Milk can only be supplied under that scheme to mothers and young children who are certified to need such a supply on medical grounds. The policy which has been adopted in this matter by the Welsh Board of Health on my instruction is as follows: While there should be no discrimination against the wives or children of men involved in the present dispute, no additional expenditure beyond that already approved for the supply of milk during the current financial year can be recognised for the Exchequer grant-in-aid. If, therefore, a maternity and child welfare authority spend more money on milk because of the dispute, the additional expenditure must be found out of the rates, but the better course would be that the distress arising out of the dispute should be dealt with by the guardians. I see no reason to modify or cancel this policy.

FRIDAY, JUNE 11TH.

The Sale of Certified Milk.

Mr. DUCKWORTH asked the Minister of Health whether, in connexion with the sale of Certified milk, he would consider

the desirability of authorising the use of tin caps instead of paper caps and seals, in view of the cost of the latter method, which debarred many producers from applying for the Ministry's licence.—Mr. NEVILLE CHAMBERLAIN replied: There is no objection to the use of suitable metal caps for the sealing of bottles containing Certified milk and a number of producers are at present using such caps. Officers of the department are prepared to advise as to the suitability of any particular cap.

Adulteration and Sale of Impure Foods.

Colonel DAY asked the Minister of Health what further steps he proposed to take for the protection of the public against the adulteration and selling of impure foods.—Mr. NEVILLE CHAMBERLAIN replied: I propose shortly to make a Milk and Dairies Order which I hope will secure a further improvement in the condition of the milk-supply. As the hon. Member is aware, regulations restricting the use of preservatives in food have recently been made and will come into operation next year. I am not contemplating any immediate enlargement of the powers of the local authorities responsible for the administration of the existing law as to the sale of food and drugs.

MONDAY, JUNE 14TH.

Special Women Factory Inspectors in India.

Mr. THOMAS HENDERSON asked the Under Secretary of State for India whether the Government of India had received any representations from provincial legislative councils as to the need that was alleged to exist for the appointment of special women factory inspectors; and, if so, whether the Government proposed to take any steps to induce local governments to make such appointments.—Earl WINTERTON replied: The Government of India have directed the attention of the Provincial Governments to the recommendation of the International Labour Conference of October, 1923, favouring the appointment of women for certain classes of factory inspection work, and have expressed the hope that in the larger Provinces it will shortly prove possible to make an advance in this direction. No report has yet been received of the action, if any, which has been taken by Provincial Governments.

The Indian Medical Service.

Sir RICHARD LUCE asked the Under Secretary of State for India whether any decision had yet been reached as to the future of the Indian Medical Service; and, if so, if he could give any details as to that decision.—Earl WINTERTON replied: My noble friend hopes to receive the Government of India's final proposals very shortly.

Appointments as Factory Surgeons.

Mr. HORE-BELISHA asked the Minister of Health what was the present procedure in the appointment of certifying factory surgeons by the Home Office; and whether he was satisfied that this procedure was the best calculated to obtain a proficient and efficient medical service.—Sir W. JOYNSON-HICKS replied: The appointments in question are made by the Chief Inspector of Factories under Section 122 of the Factory and Workshop Act, 1901. Vacancies as they occur are advertised in the *London Gazette* and communicated to the medical press, and applicants are required to give particulars of their qualifications and experience and of any other appointments they may hold. The applications are carefully scrutinised and inquiries made, and, in the case of important districts arrangements are made for the candidates to be interviewed by one of the medical inspectors. Where there is more than one candidate, the advice of the Senior Medical Inspector is taken. The Chief Inspector is satisfied that under this procedure the best men available are secured, and I have received no complaints.

Maternity Centres and Birth Control.

Mr. THURTLE asked the Minister of Health if, in view of recent events, his department had reconsidered the question of permitting the giving of birth control information at maternity and child welfare centres.—Sir KINGSLEY WOOD replied: No, Sir.

Indian Army Veterinary Corps.

Mr. LANSBURY asked the Under Secretary of State for India whether Indian candidates for commissions in the Indian Army Veterinary Corps must pass through the Dehra Dun Military College; and whether the capacity of this college was equal to the demands made by Indian candidates for commissions.—Earl WINTERTON replied: I have no doubt that the Government of India will be willing to consider candidates who have not passed through the Dehra Dun College provided that they are members of the Royal College of Veterinary Surgeons and are fully qualified in other respects. It is within the capacity of the Dehra Dun College to produce candidates for the small number of veterinary appointments which it is desired to fill from this source in addition to its primary function of producing candidates for the Indian vacancies at Sandhurst.

Animals and Poison Gas Experiments.

Captain WEDGWOOD BENN asked the Secretary of State for War whether he could explain why no less than 2131 animals, as disclosed by the War Department, were subjected to gas poisoning experiments in this country between May, 1923, and January, 1926; and whether, in view of the Washington Conference Treaty, 1922, and the Geneva Protocol, 1925, against the use of poison gas in warfare which had been ratified by 31 States, it was necessary to continue these experiments.—Sir L. WORTHINGTON-EVANS replied: Experiments with animals are, unfortunately, essential in order to obtain the necessary data for ensuring adequate defence against poison gas and for evolving efficient methods of treating gas casualties. As regards the second part of the question the Government does not feel that the Agreements referred to justify it omitting to take all possible precautionary measures to protect the Forces of the Crown and the inhabitants of the country against gas attacks in war and for this reason the experments referred to must continue.

TUESDAY, JUNE 15TH.

Recruiting of Service Medical Officers.

Lieut.-Colonel FREMANTLE asked the Prime Minister if the Government had arrived at any decision as to the recruiting of medical officers for the Navy, Army, and Air Force.—Mr. BALDWIN replied: Yes, Sir. The Government have considered the Report of the Committee appointed last autumn to consider questions relating to pay and other matters affecting recruitment of officers and nurses to the medical branches of the fighting Services and have decided to give effect to its recommendations as from July 1st next. —Lieut.-Commander KENWORTHY: Are the Government contemplating amalgamation of the three medical services? Mr. BALDWIN: No, not that I am aware of.—Lieut.-Colonel FREMANTLE: When shall we get details of this decision?—Mr. BALDWIN: The necessary orders, I understand, are to be published forthwith.

BOLINGBROKE HOSPITAL, WANDSWORTH COMMON. The report for 1925, which has just been issued, states that in addition to the William Shepherd Memorial Wing, which is approaching completion, it is proposed so to reconstruct the out-patients' department that the ear, nose and throat, and eye departments may be modernised, to provide a second theatre and a pathological laboratory. The governors state that these additions have become of vital importance, the total number of patients having surpassed all previous records.

PRESENTATION TO PROF. SAHLI.—On May 27th Dr. Hermann Sahli, Professor of Medicine in Berne, celebrated his seventieth birthday, and was presented with a festive publication containing 57 original papers from pupils of his clinic. Dr. Sahli was only 32 years old when the Bernese Government nominated him to fill the chair of clinical medicine, and for nearly 40 years has been the centre of the scientific teaching of clinical medicine in Switzerland, while his standard work on clinical examination methods has made his name known all over the world. He is the survivor of the trio which included Kocher and Langhans, and drew numberless foreign students to the Berne school.

SOCIETY OF CHEMICAL INDUSTRY.—The forty-fifth annual meeting and Congress of Chemists will be held in London from July 19th to 23rd, under the presidency of Mr. W. J. Uglow Woolcock. A full programme has been arranged. The functions include the presentation of the Society's Messel Medal to Lord Balfour, F.R.S., on July 19th, at 2.30 P.M., after which the Messel Memorial Lecture will be delivered by Lord Balfour. At 11 A.M. on July 20th a joint meeting of the Biochemical Society with the London Section of the Society of Chemical Industry will be held at the Great Central Hotel, when the scientific and industrial problems presented by the hormones—the natural drugs of the body, will be discussed, Sir Alfred Mond presiding. Papers will be read by Dr. H. H. Dale, Sec.R.S., on the Experimental Study and Use of Hormones; Dr. H. W. Dudley on the Chemistry of the Pituitary Gland and of Insulin; Mr. F. H. Carr on the Commercial Production of Hormones; Dr. H. A. D. Jowett on the History of Adrenalin; Prof. G. Barger, F.R.S., on Recent Progress in the Chemistry of Thyroxine, and Dr. J. W. Trevan on Biological Assay of Hormones. Among the works and laboratories visited will be the National Physical Laboratory, Teddington; Burroughs, Wellcome and Co., chemical works, Dartford; British Drug Houses, City-road; Imperial College of Science and Technology, South Kensington; Chemical Laboratories, University College.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY, Burlington House, W.
THURSDAY, June 24th.—4.30 P.M., *Papers to be read:* J. C. McLennan and A. B. MacLay: On the Structure of the Arc Spectrum of Gold. J. C. McLennan and H. G. Smith: On the Series Spectra of Palladium. A. M. Tyndall and L. R. Phillips: The Mobility of Ions in Air, Part III. (Communicated by Prof. A. P. Chattock.) L. C. Jackson: Investigations on Paramagnetism at Low Temperatures, Part II. (Communicated by Sir William Bragg.) Sybil Cooper and D. Denny Brown: Responses to Rhythmical Stimulation of the Cerebral Cortex. (Communicated by Sir Charles Sherrington.) *Papers to be read in title only:* Karl Pearson: Researches on the Mode of Distribution of the Constants of Samples taken at Random from a Bivariate Normal Population. Lord Rayleigh: Further Spectroscopic Studies on the Luminous Vapour Distilled from Metallic Arcs. Sir William Hardy: A Microscopic Study of the Freezing of Gel, Part I. and Part II. Sir William Hardy and Millicent Nottage: Studies in Adhesion, I. T. Moran: The Freezing of Gelatin Gels. (Communicated by Sir William Hardy.) W. Jevons: The More Refrangible Band System of Cyanogen as developed in Active Nitrogen. (Communicated by Prof. A. Fowler.) J. A. V. Butler: The Equilibrium of Heterogeneous Systems including Electrolytes, Part I. (Communicated by Prof. F. G. Donnan.) (The late) Mrs. Hertha Ayrton: Primary and Secondary Vortices in Oscillating Fluids; their Connexion with Skin Friction. (Communicated by Prof. T. Mather.) T. T. H. Verschoyle: Isotherms of Hydrogen, of Nitrogen, and of Hydrogen-Nitrogen Mixtures at 0° and 20° C. up to a Pressure of 200 Atmospheres. (Communicated by Dr. F. A. Freeth.) E. W. Marchant and J. L. Miller: The Loss of Energy in Metal Plates of Finite Thickness, due to Eddy Currents produced by Alternating Magnetic Fields. (Communicated by Sir Ernest Rutherford, P.R.S.) W. Sucksmith and H. H. Potter: On the Specific Heat of Ferro-magnetic Substances. (Communicated by Prof. A. P. Chattock.) L. B. Pfeil: The Effect of Occluded Hydrogen on the Tensile Strength of Iron. (Communicated by Prof. H. C. H. Carpenter.) T. E. Allibone: The Infra-red Secondary Spectrum of Hydrogen. (Communicated by Prof. S. R. Milner.) D. C. Rose: The Scattering of Alpha Particles through Small Angles. (Communicated by Sir Ernest Rutherford, P.R.S.) V. H. Stott, D. Turner, and H. A. Sloman: Effects of Thermal Treatment on Glass as shown by Precise Viscometry. (Communicated by Dr. W. Rosenhain.) J. E. Lennard-Jones and Miss B. M. Dent: The Forces between Atoms and Ions, II. (Communicated by Prof. S. Chapman.) J. Topping and A. E. Ludlam: Tables of log K$_0$ (x) over the Range $x=2$ to $x=12$ at Intervals of 0·001. (Communicated by Prof. S. Chapman.) B. Lambert and K. T. Hartley: An Investigation of the Effects of Variations in the Radiation Factor on the Efficiency of Dewar Vessels. (Communicated by Prof. F. Soddy.) J. E. Lennard-Jones and W. R. Cook: The Molecular Fields of Hydrogen, Nitrogen, and Neon. (Communicated by Prof. S. Chapman.) H. Florey: Observations on the Resolution of Stasis in the Finer Blood Vessels. (Communicated by Sir Charles Sherrington.) T. S. P. Strangeways and Honor B. Fell: Experimental Studies on the Differentiation of Embryonic Tissues Growing in vivo and in vitro, II. The Development of the Isolated Early Embryonic Eye of the Fowl when Cultivated in vitro. (Communicated by Sir William Hardy.) Nesta Ferguson: The Aloinæ-a Cytological Study, with especial reference to the Form and Size of the Chromosomes. (Communicated by Sir John Farmer.)

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.
TUESDAY, June 22nd.—5.30 P.M., GENERAL MEETING OF FELLOWS. Ballot for election to the Fellowship.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

ROYAL COLLEGE OF PHYSICIANS, Edinburgh.
WEDNESDAY, June 23rd.—5 P.M., Dr. John Cowan: Failing Heart (George Alexander Gibson Memorial Lecturer).
THURSDAY.—5 P.M. (last Memorial Lecture).

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 21st, to FRIDAY, June 25th.—Special afternoon demonstration in clinical surgery at the Great Ormond-street Hospital, by Mr. H. Tyrrell Gray, on Thursday, at 2.30 P.M. Special demonstration in clinical ophthalmology by Mr. Goulden on Friday at 12.45 P.M. at the Royal London Ophthalmic Hospital. These demonstrations are open to all members of the medical profession without fee.—HOSPITAL FOR DISEASES OF THE HEART AND LUNGS, Victoria Park, E. Special Course in Diseases of the Chest. The Hospital is open to all post-graduates attending the Course, and in addition special demonstrations (clinical and laboratory lectures, &c., are arranged. Second week.—LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Post-graduate course for practitioners. Daily, 4.30 to 6 P.M. Lecture for half an hour and demonstration for one hour. Medicine, surgery, and the special departments. Second week.—ALL SAINTS' HOSPITAL, Vauxhall Bridge-road, S.W. Special course in Urology. Clinical and cystoscopic demonstrations Monday and Wednesday afternoons, and evenings. Thursday and Saturday afternoons. Special lecture on June 23rd by Mr. R. Coyte on Early Points in the Diagnosis and Cystoscopic Appearances of Prostatic Enlargements. Further information from the Secretary, Fellowship of Medicine.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
MONDAY, June 21st.—10 A.M., Surgical Out-patients: Mr. W. E. Tanner. 10.30 A.M., Gynæcological Operations: Mr. A. E. Giles: Throat, Nose and Ear Operations: Mr. W. Ibbotson. 2 P.M., Medical, Surgical, and Gynæcological Clinics, Operations. 6.30 P.M., Venereal Department: Mr. R. Coyte.
TUESDAY.—2 P.M., Medical, Surgical, Throat, Nose and Ear Clinics, Operations. 3 P.M., Dr. J. K. C. Laing: Demonstration of cases illustrating Types of Mental Disease at the Colney Hatch Mental Hospital, New Southgate, N.
WEDNESDAY.—10.30 A.M., Surgical Operations: Mr. E. Gillespie. 2 P.M., Medical, Eye, and Skin Clinics, Operations. 3 P.M., Dr. S. C. Shanks: X Ray Demonstration of Tumours of Bone. 5.30 P.M., Venereal Department.
THURSDAY.—10.30 A.M., Dental Out-patients: Mr. E. S. Pierrepont. 2 P.M., Medical Surgical, and Throat, Nose and Ear Clinics, Operations. 5 P.M., Operations.
FRIDAY.—10.30 A.M., Eye Operations: Mr. N. Fleming. 2 P.M., Surgical, Medical, and Children Clinics, Operations. 3 P.M., Gynæcological Clinic. 6.30 P.M., Venereal Department: Dr. F. L. Provis.

CANCER HOSPITAL, Fulham-road, S.W.
WEDNESDAY, June 23rd.—4.30 P.M., Mr. Cecil A. Joll: Malignant Disease of the Thyroid.
FRIDAY.—4.30 P.M., Mr. E. S. Rowbotham: Intratrachea Anæsthesia.

NATIONAL HOSPITAL, Queen-square, Bloomsbury, W.C.
MONDAY, June 21st.—2 P.M., Dr. Hinds Howell: Out-patient Clinic. 3.30 P.M., Dr. Kinnier Wilson: The Neuro-Muscular System (2).
TUESDAY.—2 P.M., Dr. Walshe: Out-patient Clinic. 3.30 P.M., Dr. Grainger Stewart: The Significance of Ocular Symptoms in Neurology.
THURSDAY.—2 P.M., Dr. Kinnier Wilson: Out-patient Clinic. 3.30 P.M., Dr. Martin: Progressive Muscular Atrophy.
FRIDAY.—2 P.M., Dr. Adie: Out-patient Clinic. 3.30 P.M., Dr. Greenfield: Pathology of Cerebral and Spinal Tumours.

CENTRAL LONDON THROAT, NOSE AND EAR HOSPITAL, Gray's Inn-road, W.C.
WEDNESDAYS and FRIDAYS.—1.30 P.M., Course in Method of Examination and Diagnosis. Free to clinical assistants.

LONDON SCHOOL OF DERMATOLOGY, ST. JOHN'S HOSPITAL, Leicester-square, W.C.
TUESDAY, June 22nd.—5 P.M., Dr. W. Griffith: The Bullous Eruptions.
THURSDAY.—5 P.M., Dr. J. M. H. MacLeod: Tuberculosis Cutis.

MANCHESTER AND SALFORD HOSPITAL FOR SKIN DISEASES, Quay-street.
THURSDAY, June 24th.—4.30 P.M., Dr. Higgins: The Response of Skin Diseases to Radiations.

UNIVERSITY OF SHEFFIELD POST-GRADUATE CLINICS.
FRIDAY, June 25th.—3.30 P.M. (at the Royal Infirmary), Dr. Yates: Some cases illustrating Problems of Treatment.

Appointments.

GABRIEL, W. B., M.S. Lond., F.R.C.S. Eng., has been appointed Hon. Surgeon to the Royal Northern Hospital.

MCSWINEY, B. A., M.B., B.Ch., B.A.O. Dub., Professor of Physiology in Leeds University.

PEARSON, W. J., M.A., M.D., B.Ch. Oxon., M.R.C.P. Lond., Honorary Physician to Cheyne Hospital for Children, Chelsea.

SALISBURY, WALTER, M.D., M.S. Lond., F.R.C.S. Eng., Honorary Assistant Surgeon, Northampton General Hospital.

Queen Charlotte's Maternity Hospital: JONES, A. MORRIS, M.D. Manch., Assistant Medical Officer to the Antenatal Department; SIMPSON, G., M.B., B.S., M.R.C.P., Senior Resident Medical Officer; JOHNSTON, H. W., M.B. Tor., F.R.C.S. Edin., Assistant Resident Medical Officer.

West Bromwich and District Hospital: PARSONS, L. G., M.D., F.R.C.P. Lond., Hon. Consulting Physician; GRAHAM, L., M.B., B.S. Lond., F.R.C.S. Eng., Hon. Consulting Gynæcologist; MENCE, HAROLD G. V., M.B., Ch.B. Birm., M.R.C.S., L.R.C.P. Lond., Hon. Surgeon.

Certifying Surgeons under the Factory and Workshop Acts: ARMSDEN, R., L.R.C.P. Lond., M.R.C.S. (Carnarvon; MARSHALL, R., M.B., Ch.B. Glasg. (Biggar, Lanark).

Vacancies.

For further information refer to the advertisement columns.

Association of Surgeons of Great Britain and Ireland, 51, Wimpole-street, W.—£350 Surgical Scholarship.
Aylesbury, Ryl. Buckinghamshire Hosp.—Res.M.O. at rate of £200.
Cambridge Physiology School.—George Henry Lewes Studentship, £250.
Cape of Good Hope.—M.O.H. £1100.
Cape Town, Somerset Hospital.—Supt. £1000.
Chelsea Hospital for Women, Arthur-street, S.W.—Hon. S. to Ear, Nose, and Throat Dept.
Chesterfield and North Derbyshire Royal Hospital.—Fifth H.S. At rate of £100.
Cheyne Hospital for Children, Chelsea, S.W.—Hon. Surg.
Doncaster Royal Infirmary.—Third H.S. At rate of £150.
Dreadnought Hospital, Greenwich.—H.P. and H.S. Each at rate of £110. Also P.
Durham County Sanatorium, Wolsingham.—Locum £40 a month.
Evelina Hospital for Children, Southwark, S.E.—Hon. Dental S.
Exminster, Devon Mental Hospital.—Jun. Asst. M.O. £300.
Indian Research Fund Association, Simla.—Research Workers on Malaria, also Entomologist. Each at rate of Rs.1500 per mensem.
Ipswich, East Suffolk and Ipswich Hospital.—H.P. and Three H.S.'s: Each £100.
King George V. Sanatorium, Goldalming, Surrey.—Jun. Asst. M.O. £500.
Liverpool, Eye and Ear Infirmary, Myrtle-street.—H.S. £100.
London Hospital, E.—First Asst. to Children's Dept. £400.
London Temperance Hospital, Hampstead-road, N.W.—Cas. O. At rate of £120. Also H.P. At rate of £100.
Macedonia, Friends' Council for International Service.—Medical Work. £14 per month.
Manchester Radium Institute, Nelson-street.—Asst. Radiologist.
Manitoba University.—Asst. Prof. of Anatomy. $3,000.
National Hospital, Queen-square, W.C.—Asst. P.
Plymouth, South Devon and East Cornwall Hospital.—Jun. H.S.
Portsmouth, Royal Hospital.—Cas. O. At rate of £100.
Queen's Hospital for Children, Hackney-road, E.—Cas. O. At rate of £100.
Reading, Royal Berkshire Hospital.—Three H.S.'s. At rate of £150.
Royal Free Hospital, Gray's Inn-road, W.C.—Cas. O. £150.
Royal London Ophthalmic Hospital, City-road, E.C.—Sen. H.S. At rate of £150. Also Refraction Asst. At rate of £100.
Royal Northern Hospital, Holloway, N.—Asst. Surg. O. £75.
Royal Waterloo Hospital for Children and Women, Waterloo-road, S.E.—Hon. Med. Reg.
St. Bartholomew's Hospital Medical College.—Sen. Demonstrator and Demonstrator of Physiology.
Sheffield, Jessop Hospital for Women.—Sen. Res. O. £250. Also Asst. H.S. At rate of £100.
Sheffield Royal Infirmary.—Two H.S.'s, H.P., Asst. Cas. O. and Ophth. H.S. All at rate of £80.
Sheffield, South Yorkshire Mental Hospital.—M.O. £400.
Southampton, Free Eye Hospital.—Locum Tenens Ophth. H.S.
Sudan Medical Service.—Four M.O.'s. £E.720.
University of London.—External Examiners.
Virol Ltd.—Research Scholarship in Clin. Pathology. £200.
Westminster Hospital, Broad Sanctuary, S.W.—Asst. Med. Reg. and Asst. Surg. Reg. Each at rate of £50. Also Asst. S. to Ear, Nose, and Throat Dept.

Births, Marriages, and Deaths.

BIRTHS.

CAIRNS.—On June 8th, at Woodcroft, Loughton, the wife of H. W. B. Cairns, M.B., F.R.C.S., of a son.
SHEPHERD.—On June 8th, at St. Andrew's-crescent, Cardiff, the wife of Dr. C. W. Shepherd, of a son.
URWICK.—On June 11th, Joan Bedford Urwick, L.R.C.P., M.R.C.S., the wife of L. Urwick, of Lawn-road, Hampstead, N.W., of a daughter.

MARRIAGES.

BROWN—BANNERMAN.—On June 9th, at All Saints' Church, High Wycombe, Walter Graham Scott Brown, M.B., B.Ch., to Margaret Affleck Bannerman, M.B., B.S., only daughter of Dr. and Mrs. G. D. K. Bannerman, of Riversdale, High Wycombe.
GRAY—CARR.—On June 12th, at Hampstead, Oliver Gray, M.B., Ch.B., to Marjorie Howard, eldest daughter of Mr. and Mrs. Francis H. Carr.
TAYLOR—ROSS-JOHNSON.—On June 10th, in London, Julian Taylor, O.B.E., M.S., F.R.C.S., to Edith Margaret Ross-Johnson, M.B., B.S., M.R.C.S., L.R.C.P.

DEATHS.

CHARLESWORTH.—On June 5th, at his residence, Hastings-road, Ealing, Henry Charlesworth, C.M.G., Brevet-Colonel (late R.A.M.C. retd.).
COTES.—On June 10th, at a nursing home, Plymouth, following operation, Digby Francis Baynes Cotes, M.R.C.S. Eng., &c., of Week St. Mary, aged 63 years.
JAMES.—On June 7th, Stanlake James, M.R.C.S., L.R.C.P., of St. John's-road, Putney, aged 61.
MORRIS.—On June 14th, at Connaught-square, Hyde Park, W., Sir Henry Morris, Bt., aged 82.
MOTT.—On June 8th, at the General Hospital, Birmingham, Sir Frederick Walker Mott, K.B.E., M.D., LL.D., F.R.S., F.R.C.P., of Nottingham-place, W., aged 72.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

THE TECHNIQUE OF RADIUM THERAPY.

AT the Radium Institute, London, inquiries are frequently received as to the precise methods adopted in the treatment of various cases. It has therefore been thought expedient by the medical superintendent, Mr. A. E. Hayward Pinch, to publish a short manual of technique in radium therapy as a supplement to the "Clinical Index of Radium Therapy" which was published in 1925. The procedures described and illustrated are those used at the Radium Institute. It is not claimed that they are necessarily the best methods, but they are found in practice to give satisfactory results.

The book, of which any practitioner may obtain a free copy on application to the secretary at the Institute (Riding House-street, London, W. 1) contains some 40 pages and the same number of plates. It is divided into nine chapters headed respectively: General Considerations; Precedent Operations; Handling of Radium Apparatus; Surface Applicators: their Use in Special Situations; Tube Apparatus; Preliminary Measures; Insertion of Tubes; Use of Tube Apparatus in Special Situations; Complications and Sequelæ.

The summary of its contents, given below, is notexhaustive, but will serve to indicate its general scope and to point out some observations of especial interest. The need for much clinical experience and surgical skill on the part of the radiologist and the advantages of coöperation with surgical colleagues, are emphasised throughout. Another point of importance which is apt to be overlooked is that the general health of all patients should be brought to as high a standard as possible before radium treatment is commenced. The principal conditions which militate against successful radium therapy include anæmia, cachexia, and diabetes. Inflammation, sepsis, and previous X ray treatment are also contra-indications to radium therapy under the following conditions:—

Inflammation.—Tissues while acutely inflamed should not be subjected to radium irradiation, as it is impossible accurately to predict the extent and degree of the resultant reaction under such conditions. A more or less complete subsidence of the active inflammatory process must be secured before radium treatment is given. The chronic inflammatory changes, accompanied by dense leucocytic infiltration, which are frequently met with at the growing edges of malignant tumours are, on the other hand, favourably influenced by radium irradiation, and their resolution is often speedily induced.

Sepsis.—This complication is a frequent and very harmful one, and is specially apt to prove troublesome in the mouth, larynx, vagina, and uterus. Attempts should be made to secure a condition of surgical cleanliness before radiation. The removal of sloughs, the opening and cleansing of sinuses and abscesses, followed by repeated and regular irrigation of the regions with suitable antiseptic solutions, should be carried out for several days prior to the use of radium, or an increase of the septic process will follow.

Previous X Ray Treatment.—Areas which have been subjected to many X ray exposures are often leathery, avascular, and devitalised, and have little power of satisfactory repair. When treating such sites the dosage administered should be distinctly low or the tissues may break down over a wide area, giving rise to a painful and intractable ulceration.

Precedent Operations.

Before subjecting a patient to radium treatment it is often advisable to perform some operation, either in order to remove a source of irritation or for some other purpose. Such operations include extraction of teeth and removal of diseased bone before treating epithelioma of the tongue, mouth, or jaw; tracheotomy, to enable a prolonged intra-laryngeal exposure to be given, or as a precautionary measure against œdema in growths in the inferior pharyngeal, laryngeal, or post-cricoid regions; gastrostomy, in carcinoma of the œsophagus; colostomy, in growths of the sigmoid flexure or rectum; and cystostomy, in cases of carcinoma of the bladder of long standing.

Radium Apparatus.

Frequent contact with radium and radon apparatus, even though the period of each manipulation be of extremely short duration, will sooner or later induce definite inflammatory and trophic changes in the fingers and hands of the workers, unless certain precautions are rigidly adhered to. The changes are due to the cumulative effect of small repeated doses of radiation, principally of the beta type. All apparatus should be handled with wooden or rubber-covered metal forceps, at least a foot in length, and the hands should be protected with leather gloves. Tubes and

needles whilst being threaded should be held with specially adapted forceps, the silk employed having been treated with hard paraffin wax. No nurse or attendant should be allowed to make up or prepare apparatus daily for a period of time exceeding three months, and an equal or even longer period of rest from contact with radium must be given before the work is resumed. As an additional precaution against the cumulative effect of the gamma radiation, which in susceptible subjects may initiate general disturbances—anæmia, amenorrhœa, &c.—the workers should sit at a table which is covered with lead 5 cm. in thickness, a leaden breast-plate being applied to the edge of the table of such height as completely to cut off all emergent rays from the body and head of the workers. The stock of radium should be kept in a separate room, situate as far as possible from the radium workroom, to which short visits should be paid at need. Apparatus when prepared for use should be placed immediately in carrying boxes lined with thick lead and provided with a long, stout leather sling. Emanation tubes and seeds are conveyed from place to place in a special shaped carrier.

Surface Applicators are used (1) unscreened or lightly screened, for the treatment of superficial growths and conditions; (2) heavily screened, and emitting only the gamma radiation, for employment in deep radium therapy. Their size ranges from 1 to 30 square cm., and their shape may be circular, square, or rectangular. They are usually made with radium sulphate. It is also possible to utilise radium tubes as surface applicators by means of shallow leaden trays filled with hard parafin wax melting at 60° C. The tray is laid upon a hot plate until the wax melts, the tubes are placed in the melted wax, their number and spacing being regulated by the activity desired; the tray is then removed from the hot plate, and the wax speedily cools and solidifies, retaining the tubes securely in accurate position. With growths of irregular and uneven outline, dental modelling compound is of particular value, as it enables the disposition of the tubes to be made in such fashion as to secure the most effective radiation. The Institut du Radium at Paris employs an embedding compound made of beeswax 100 g., paraffin wax (melting at 62° C.) 100 g., pine sawdust 20 g. This can be worked quickly and cleanly, and is most useful when treating a large surface area with applicators of any kind.

General directions for the use of surface applicators are given and also detailed directions for the use of surface applicators in special situations such as the orbit, the mouth, the breast, the thorax and abdomen, and the vulva, perineum, and anus.

Tube Apparatus.—The five principal forms of tube apparatus are needles, cylinders, "hour-glass" tubes, "window" tubes, "sleeve" tubes, and "seeds."

Needles are used for actual insertion into the substance of growths. Those in general use at the Institute have walls of silver 1 mm. in thickness, or platinum 0·3, 0·4, or 0·5 mm. in thickness. One extremity is pointed, the point being of iridium in the platinum tubes. The other extremity is closed with an eyeletted stopper, or a screw thread, into which a pliable silver wire can be inserted. The length of the tubes ranges from 1 to 5 cm., and their diameter from 0·9 to 2·2 mm. They contain from 1 to 25 mg. of radium element.

Cylinders.—These tubes have a blunted free extremity, and are closed by an eyeletted stopper or screw thread. They are employed chiefly for the radiation of cavities—e.g., bladder or uterus—and have walls of 2 mm. of lead or 1 mm. of silver. They vary from 1 to 6 cm. in length, and from 3 to 7 mm. in diameter. They contain 12·5, 25, or 50 mg. of radium element.

"*Hour-glass*" *Tubes* are of special service in the treatment of malignant strictures of the œsophagus or rectum, being easily retained in accurate position. They have walls of 2 mm. of lead or 1 mm. of silver, and are made in lengths varying between 2 and 10 cm. Their charge is usually 50 mg. of radium element.

"*Window*" *Tubes.*—A leaden tube with walls 2 mm. in thickness has a window occupying one-third of its circumference. This gap is closed with a screen of 0·1 mm. of lead, 0·5 or 1·0 mm. of silver. A tube of radium salt or radon is inserted into the tube, which is placed so that ulcerated or fungating portions of the growth receive the lightly filtered radiation, and the remainder the heavily filtered rays.

"*Sleeve*" *Tubes.*—A silver tube with walls of 0·5 mm., inserted in a collar or sleeve of lead, 1·5 or 2·0 mm. in thickness, which encircles half or two-thirds of its length, is useful in the treatment of small localised ulcerated recurrences in the vaginal vault after hysterectomy.

Radon may be used instead of radium element in any of these tubes.

"*Seeds.*"—This term is applied to tiny capillary glass tubes, 2 to 3 mm. in length and 1 mm. in diameter, which are charged with 1 to 2 millicuries of radon, and permanently buried in growths, unscreened. One millicurie emits 132 millicurie-hours of radio-activity in its passage to complete decay. The excessive fragility of these "seeds" necessitates the use of special apparatus for their insertion.

Measures Preliminary to Treatment by Radium.

Aspiration is necessary or advisable before treating cystic or caseating growths—e.g., cystic hygromata or caseating tuberculous glands. In growths affecting the maxillary antrum or nasal fossæ, and in morbid conditions of the uterine mucosa, a preliminary *curettage* is often advantageous. Exuberating fungating growths of the palate, fauces, lip, vulva, and cervix are particularly suitable for preliminary treatment with the *diathermy* knife or button. Cases of annular carcinoma of the œsophagus or rectum sometimes require *dilatation* before a radium tube can be inserted. *Douches* of tr. iodi. ʒi to 1 pint of warm water, t.d.s., may be required for patients suffering from ulcerated carcinoma of the uterus. If the iodine douche prove irritating, glycothymoline (1–20) may be substituted. The two last douches before radium is inserted should be of flavine, 1 in 2500.

Local Anæsthesia.—The most generally useful local anæsthetic is a solution of cocaine and adrenalin, injected hypodermically. Cocaine hydrochlor, 10 per cent. solution, is of great value when inserting tubes or needles into the pharynx, palate, fauces, or tonsils. Novocaine 5 per cent. is to be preferred for the urethra, vulvæ, anus, and rectum.

General Anæsthesia.—Nitrous oxide gas and oxygen is the combination of choice; but if deep muscular relaxation is necessary a mixture of chloroform and ether (open method) may be used. Endotracheal insufflation by the double tube method is useful in growths involving the upper respiratory tract, and in operations below the level of the umbilicus spinal analgesia by stovaine is valuable.

The Technique Employed.

Mr. Pinch gives a succinct account of the technique employed in the insertion of tubes for surface growths by special forceps with longitudinal grooves, by trocar, cannula, and plunger, and by means of a stiff but pliable silver wire attached to one extremity of the tube. Wood's fusible alloy is employed in the connexions between wire and tube when the tubes are inserted into cavities such as rectum or bladder. This alloy melts at 60° C. and is used to seal the stopper in the screw-threaded mouth of the tube. The distal end of the screw stopper is attached to the pliable silver wire by means of ordinary solder (melting-point 370° C.). When it is desired to remove the radium container from the interior of the tube its attached extremity is gently heated in a gas flame until the fusible alloy melts, when the stopper is readily unscrewed and the tube emptied of its contents. The excessive fragility of "seeds" necessitates the employment of a special form of applicator—a simple and effective one being a trocar and cannula of very fine bore.

A discussion follows on the use of tube apparatus in special situations, including nose, mouth and tongue, pharynx and fauces, larynx, œsophagus, stomach, colon, rectum, uterus, bladder, prostate, and urethra. These sections can hardly be summarised with advantage, for the significance of the advice depends on details.

Complications and Sequelæ.

Bacterial Infection.—Radium irradiation appears definitely to lower the resistance of some patients to any kind of pyogenic infection for two or three weeks, and an acute inflammatory condition, almost erysipelatoid, may supervene. For inflammation on an unexposed part of the body collosol ichthyol ointment is useful; for the face, neck, or hands a good cold cream containing boric acid, or a small amount of hydrarg. amm. chlor. is recommended.

Telangiectasis.—Some degree of telangiectasis will almost inevitably follow periodic radium irradiations of any area of the skin. Untreated telangiectases tend to get larger, so that if they are situated in face, neck, or hands they should be treated carefully with a fine-pointed electric cautery.

Pigmentation occurs less frequently than telangiectasis, and in the early stages may be lessened by application of weak bichloride of mercury and glycerine lotion. Its development is aggravated by exposure to sunlight, and affected areas should be protected with grease paint in bright weather.

Ulceration.—A somewhat intractable superficial ulceration is occasionally noted over the surface of nævoid lesions which have received numerous treatments. Treatment should be interrupted for at least six months, and any subsequent exposures should be of shorter duration and given at longer intervals.

Annular fibrosis results from frequent repetition of exposures with heavily-screened tube apparatus within cavities, notably the rectum and vagina. It requires regular dilatation or may ultimately cause occlusion of the canal.

"*Radium Burns.*"—This term should not be applied to the vesication and ulceration following an unscreened

radium exposure. Here a destructive reaction has been deliberately produced and satisfactory repair can be anticipated. The term should be reserved for the few instances in which the exposure and dosage have been prolonged and excessive, owing to accident, negligence, or ignorance. The ulceration is extreme, pain is severe and persistent, and repair always slow and frequently imperfect. The treatment of these true "radium burns" demands much patience. The ulcerated area is often covered by a foul tenacious washleather slough, the separation of which can be hastened by plugging the cavity daily for three or four hours with gauze soaked in a 1 in 4 solution of enzymol. On removal of the plugs the cavity should be irrigated with a 1–10 solution of hydrogen peroxide and gently dried. As a regular dressing, an ointment containing 5 per cent. of acid carbolic in a lanolin base, chloretone compound ointment, or emollientine (Parke, Davis and Co.) are of value. When the pain and tenderness have largely disappeared scarlet red ointment, or zinc ointment containing 2 per cent. of ferri subcarb. and 0·5 per cent. of argyrol is recommended. When granulation is active and repair is taking place, granulogen or collosol argentum pasta expedite healing.

THE TEACHING OF SWIMMING.

To the Editor of THE LANCET.

SIR,—Last Easter there was a sad accident in the River Brent; two boys, who were paddling in it, stepped into a part which deepened suddenly and were both drowned; one boy was 14 years of age, the other 13; neither of them could swim. The education authorities do not undertake the teaching of swimming, but it is included in the education code as an approved physical exercise; only one or two elementary schools have their own swimming bath and only one or two municipalities have provided separate swimming baths for their school-children. However, swimming instruction has been taken up by the Amateur Swimming Association, and its education committee has prepared a small handbook,[1] fully illustrated, setting forth how to teach a class by land drill and in the water. It is recommended that children of 8 years of age or older be taught in classes of 5 and 20. A large number of school-children learn to swim, many of them very well, as may be seen at the schools' swimming galas in the autumn, but all the children do not learn; it may happen that there are so many children that they have to be sent in classes of 50, which is more than one instructor can teach in the allotted time, also that there is no place a second summer for the child who has not learnt the first, also that no land drill has been held.

They have a better way in the army schools: they send all their children in their ninth summer to their baths to be taught in classes of 20 by the swimming instructor; thus, all army children of 10 years of age can swim. This though good is not perfect; in British Guiana, the reed country of Irak, and the South Seas the children learn to swim as soon as they can walk; this is a great advantage, for during childhood they will enjoy bathing more and become better swimmers. The South Sea Islanders taught the Australians the crawl stroke, and they us.

English children can be taught to swim when quite young; her parents taught a little girl of 4 to swim, and a boy of 5 also could swim; a little girl of 5 floats in her domestic bath and can turn over in the water and pick up objects. 96 per cent. of children attend the elementary schools, the remaining 4 per cent. attend kindergarten or preparatory schools when young; only a few of these schools have their own swimming baths, but quite a small bath would be sufficient for teaching a few children at a time. Swimming once learnt, as Sancho Panza said, is never forgotten; it is good exercise, for it employs most of the muscles, and equally on the two sides of the body; it is a pleasant pastime, but little interfered with by rain, and inexpensive; but there are various grave dangers connected with it, and the public should, each summer, be warned of these; recently a girl of 13 was swimming in a public bath, she was seen to sink, was rescued, respiration was partially restored, but she died later.

I am, Sir, yours faithfully,

Putney, S.W., June 13th, 1926. WALTER EDMUNDS.

*** Mr. Edmunds's letter is well-timed for the beginning of the bathing season. The teaching of swimming should be an obligatory part of the educational curriculum of any island State. An important section of the great Dusseldorf Medical Exhibition is devoted to swimming on the ground that it stands first among healthy sports in hardening the body and making it resistant to disease. The slogan of this section might be taken over thus: "Every Briton a swimmer, every swimmer a life-saver."—ED. L.

[1] Swimming Instruction. Simpkin, Marshall & Co. 1*s*.

ADVICE ON MEDICAL ETHICS.

AT the annual meeting of the London and Counties Medical Protection Society (see p. 1232) the report, which was adopted, contained the following examples of serviceable advice given to members of the Society on ethical difficulties.

(1) A member wrote to the Society complaining that consultants saw patients of his without his knowledge, advising them and prescribing for them, and then writing to him informing him of what they had done. The member was advised that it had often been contended, with much force, that as a barrister will only advise through a solicitor, so a consultant should only advise through the patient's usual medical attendant, but that this was not the invariable custom in the medical profession. He was told, however, that it was desirable for a consultant to advise and prescribe through the medical attendant, if known, thus giving him an opportunity to discuss any change of treatment, &c., beforehand.

(2) A member inquired if it would be proper for him to take a radiogram for a patient who was consulting an osteopath, and to explain to the patient what it indicated. He was advised that by doing so he might be assisting an unqualified person to do work requiring surgical knowledge and skill. He was also told that it was understood that medical practitioners specialising in X rays declined to see patients except on the recommendation of a doctor, and that the films and reports were only handed to that doctor, and not in any case given to the patient. The member was advised that this seemed to be the correct procedure.

(3) A member wrote that an inquiry was to be held by a local ethical committee into an accusation of unethical conduct made against him. A complaint had been made against him by a medical practitioner that he had seen a patient of his otherwise than in consultation. It transpired that the patient had refused to continue under his usual medical attendant, and wished to change. The member was advised as to his defence, and was recommended to conduct his own defence, and not to be legally represented. After the inquiry the ethical committee decided that he had not offended against any ethical law and had not acted in any way contrary to the ordinary custom of the profession.

CANADIAN MEDICAL DIRECTORY, 1926.

THE ninth edition of the Canadian Medical Directory and Physicians' Handbook, which has just reached us, contains alphabetical and topographical lists of some 9000 physicians, 2850 dentists, and 3000 druggists living within the Dominion. The volume opens with a section of 90 pages reciting the Canadian Medical Act of 1886, the names of the Medical Council and of the Board of Examiners, as well as instructions for registration and examination. A brief account is then given of each of the nine universities—Alberta, Dalhousie, Laval, Manitoba, McGill, Montreal, Queen's, Toronto, Western Ontario—with the professorial staff, examination regulations, and other academic information necessary for medical and dental students. The Directory itself, under the heading of each province, contains the medical laws and regulations in force locally, along with a list of hospitals, sanatoriums, medical and dental societies, and the personnel of the public health staff. The Physicians' Handbook consists of a compendium of useful information for quick reference, including the Narcotic Drug Act of 1923, a classified list of specialists, and an alphabetical list of chemists and chemical companies, and of dealers in druggists' sundries and physicians' and surgeons' supplies. The book is well indexed and easy of reference. In paper cover the price is 7 dollars; bound in cloth 8 dollars. It is published and printed by Messrs. A. P. Pigeon, Ltd., of 109, Ontario-street East, Montreal, Canada.

Dr. Joseph Anthony Ferriere has been appointed by the King a Nominated Member of the Council of Government of the Colony of Mauritius.

Prof. S. Mallannah, of Osmania Medical College, writes that the Parel Laboratory at Bombay is likely to introduce some improvement in Haffkine's prophylactic fluid against plague. It has been found that the clear filtrate or supernatant fluid possesses greater antigenic value than the whole fluid, and hence the sediment is non-essential. Prof. Mallannah made a similar observation many years ago (*Indian Medical Record*, Jan 3rd, 1900). The filtrate does not give rise to the troublesome induration at the seat of injection, which may last for three or four months.

West German Spas: Corrigenda.—In the article on pp. 1164–65 of THE LANCET of June 12th, under Schlangenbad "steam bath" should read "*stream* bath," and under Wildungen the penultimate sentence by omission of two commas should read "although the water drinking and bathing are considered . . . ."